The Sleepclenching (SC) Syndrome
By
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There is not much information regarding squeezing our teeth together when sleeping (sleepclenching) or is there any real concern, but sleepclenching is a serious health problem. It is the main cause of many of our dental problems and most of the head and neck pain.

No one knows why we clench our teeth when sleeping. Some of us clench a lot while others do not, but everyone clenches; I have never had a patient that did not. A dentist may tell you that you don't but he or she may not familiar with the signs and symptoms of sleepclenching. The signs and symptoms may be unnoticeable to you but they are there. On the other hand, a heavy clencher will have some severe dental problems or serious head and neck pain. If you dream you clench. That said, squeezing our teeth together when sleeping is perfectly normal and needed; it is nothing to be ashamed of. It is only pathologic when done too much.

This book is about: (1) Sleepclenching (SC) is the cause of occlusomuscular (OM) and occlusodontition (OD) problems, (2). Detecting sleepclenching, (which is easy to do) and, (3). Curing OM and OD problems.

The jaw must be balanced, that is, the teeth on both sides must hit at the same time when squeezing our teeth together when sleeping. This can accomplished in two ways: (1) A balanced bite splint, which is a piece of plastic that is equilibrated (balanced) so that the teeth hit at the same time on the piece of plastic and, (2) The teeth must be balanced by selective grinding (equilibration). You need to find a qualified dentist to do this. A dentist can learn how to balance the jaw by way of classes or videos.

The intent of this book is to help one to learn how to detect SC trauma and help people with TMJ and tooth problems to understand what is causing their problem; it is a reference book, you will refer to often.

Most bite appliances (mouth guards) are never balanced so they are worthless other than temporarily changing SC patterns, which can help, but can also cause new problems. Collectively, they are called deprogrammers. They cannot cure TMJ problems and should never be used long term.

Occlusomuscular (OM) disease involves pain caused by squeezing teeth together when sleeping, e.g. TMJ, headaches, ear problems, and all kinds of head and neck muscle problems.
Occlusodentition (OD) disease involves teeth and their supporting structures. Sensitive teeth, gum recession, abscess teeth and advanced periodontal disease are a few of the dental problems caused by SC trauma.

I hope that the book will help you understand how things get messed up. It will help you come up with the right questions to ask your dentist, although there are not many dentists trained in occlusomuscular therapy (occlusal therapy), because it has to be learned after one finishes dental school. There is much misunderstanding about ‘sleep’ SC among my colleagues. That said; let me give you some ideas about what to do.

If you could stop sleep-SC TMJ and dentition problems would go away or get better. Sometimes you clench less, which will reduce symptoms, while other times you clench more, which will increase the symptoms. Most people have episodes of heavy SC. This causes the problems to come and go.

Most TMJ problems occur from squeezing on posterior (back) teeth, so if we separate the back teeth during SC we can temporarily eliminate most of the problems. We can do this with an anterior deprogrammer (AD), which will be explained in this text. However, right now, we need to explore the signs and symptoms of sleep-SC.

Deviation to one side when opening the mouth exposes long-term SC, but it may not indicate active SC. However, if this occurs in a 20 to 30 year old, you can strongly suspect sleep-SC. It is more useful in telling us that the joints are not located in the same place on each side. Deviation to the left indicates the right joint is further back and that the right side of the jaw is a little longer.

Rest Areas (anterior teeth matching up end to end) is a sure sign of long term SC. Have the patient put his or her anterior teeth end to end and move around slightly. If any of the teeth have a pattern-like contact, there is no question of a history of SC trauma. This only tells you that there is a history of SC. It does not tell you if the SC trauma is active. In younger patients, it is often active.

Observing anterior crossover can help. Instruct the patient move from side to side. If a back tooth keeps the front teeth from touching, we have a potential problem with sternocleidomastoid muscles. This can cause one’s head to lean. An anterior open-bite during crossover (as seen in the photo) is a sign that causes me to suspect potential ST (spastic torticollis). The photo shows severe crossover interference. The right third molars are preventing crossover closure of anterior teeth. This is causing severe over-contraction of the left sternocleidomastoid muscle causing the patient’s head to lean to the left (Spastic Torticollis).
Restricted jaw movement to one side is a sure sign of active SC trauma. The first photo shows restricted movement to the right and the other shows normal movement to the left.

Observing facial anomalies can indicate spastic muscles (SC trauma). For example, I was talking to an individual that had a peculiar look on the right side around the eye, sort of a drooping look. I asked her if she had a headache on the right side, and she said, “Yes”. This is an easy observation.

History taking, can tell us about SC too. Ask the patient if they have any sensitive teeth, if they do, they are currently SC. Headaches, jaw aches, earaches, ringing in the ear, facial pain, or neck aches may be caused by other things, but they are probably caused by active SC.

These simple observations and history taking can give you much information without a physical exam. However, a few simple ‘in-the-chair’ physical exams will confirm your diagnosis.

Tapping on teeth will give two different signs, one is sound, and the other is vibration. A high-pitched sound indicates little no SC trauma, while a low pitch sound does. You can differentiate the amount of SC by the tone of the sound. Vibration can be detected by placing you index finger on the tongue side of the tooth, while tapping. There will be a lot of vibration or none. In ether case, it is easy to set up a scale, say 0 to 4 for SC trauma. It is surprising how close you, and your staff will be. This is a good way to teach patients which teeth are being clenched on. The Tapping Exam is an incredibility useful exam. It tells me what is going on now, which means that it is used before treatment and to determine the efficacy of treatment. It is the single most important exam in my book. It will get much attention in this book.
The Q-Tip Exam is another great simple exam. Using a cotton swab or ToothSlooth™ (pictures below) is an amazing way to detect active muscle problems (spastic muscles). Instruct the patient squeeze on one or the other between first or second molars on one side then the other. When pain occurs on the opposite side, you can be sure of SC trauma (TMJ).

The Joint Pressure Exam can be helpful in detecting SC trauma. By placing the index fingers in the ear and pressing forward toward the joints you can often reveal a sore joint. If this does not expose a tender joint, then have the patient open slightly and move side to side rapidly (with the fingers in the same position). If there is a tender joint, this will expose it. Make sure you do the first step first because you can cause much pain in the joint very inflamed.

Palpating muscles is a way to detect sore muscle caused by SC trauma (Deeper muscles can’t be detected.)

A Sore Tooth usually indicates SC trauma. When biting on Q-tips cause soreness in a tooth, it is usually SC trauma. Even better, is to use the simple plastic tool called ToothSlooth™ (see photos above) to locate a sore tooth. One side has an indentation that fits a cusp tip and the other side is flat. It can locate a particular tooth problem as well as detecting spastic muscles. It is an amazing useful tool.

Receding gums can be another sign of SC trauma.

Differential Diagnosis: SC trauma causes many head and neck aches, and pains, which we lump as TMJ, but SC may not be the only cause of TMJ-like aches and pains. We must do some differential diagnosing to find what is causing pain. When patients have earaches, headaches, pain around the eyes, sinus pain, neck aches, migraines and other weird head discomforts, SC may or may not be the sole cause.
For example, pain around the eyes could be caused by overuse of the eyes, occipital nerve damage, SC trauma, or any combination.

Sinus-like pain can be caused by infection in a sinus or by SC. That is, SC can cause pain in a facial muscle that can make one believe they have a sinus problem. There can also be pain from sinus infection and SC trauma combined.

Earaches can be caused by infection in the ears or from SC. In the latter case, it is not an earache but a TM joint-ache, which mimics an earache.

So, pains in the head and neck must be examined to determine their cause to start proper treatment. Including SC trauma as the culprit is much easier to do than finding other causes, such as neuralgia caused by nerve problems. In addition, since SC causes most head and neck pains, it should be the first suspect.

A dentist needs to be close to an ENT doctor; the dentist can teach the ENT about occlusomuscular problems and ENT can help the dentist with ear problems. The joint and the ear chamber are close friends (or enemies). The relatively unknown SC syndrome and SC is so important. Not only should dentists be competent in the exams for diagnosing SC problems, but also the rest of the medical profession should be equally knowledgeable. Many of the exams can be done by any doctor or nurse without getting out of their area of medicine. For example, a MD can differentiate between an occipital cause and SC cause of eye pain and start appropriate treatment. A dentist can decide it SC is the cause of the aches and pains and treat or refer to the appropriate medical doctor.

All signs and symptoms mentioned above point to the SC trauma; however, they do not eliminate ‘other’ causes. Physicians that use some of these exams can at least know whether SC trauma is a problem.

Transcranial radiographs and MRIs are poor diagnostic tools. The simple observations, physical exams, and history taking will provide more information quicker and with less expense. SC trauma is always the cause of occlusomuscular problems. The exams will help you understand why some people get muscle and joint problems and others get tooth problems. Once you understand this idea, you can appreciate why SC on different teeth will cause different problems.

The idea is easy to understand, but you just have to trash much of what you know about ‘TMJ’ to get out of the land of confusion where many of our colleagues live. That is what I had to do. As a periodontist, it was tough admitting I was not as smart as I claimed.

Up to this point I have given a synopsis of diagnostic tools and methods. We will examine all the signs and symptoms in more detail.
Muscle pain is the primary problem in TMJ. Muscle spasm cause headaches, neck aches, earaches, jaw aches, facial pain, torticollis, and even migraine type pain. While these muscle spasms cause all sorts of pain, the literature does not even mention SC trauma as a cause of headaches. Therefore, it is no wonder why people don’t think of SC when TMJ is suspected.

Use simple Q-tips to learn about an unbalanced jaw.

**Back teeth:** When a person squeezes on a Q-tip between back teeth hard enough, the other side will come together; he or she will begin notice discomfort in the jaw closing muscles on the other side because the muscles have to squeeze harder to close the bite.

**Bicuspid area:** One can squeeze on a cotton swab in the bicuspid area. When the other side closes, discomfort in the temporal areas will occur. **Cuspid area:** Squeezing in the cuspid area will cause discomfort in the TM joint area on the opposite side. This is caused by overuse of the small muscles that attached to the condyle and disc. Again, if one were having TMJ problems in that area, the discomfort would be more intense. **Anterior teeth:** SC on the back of an upper anterior tooth usually affects the opposite joint area. An over-contoured cap (one that is too fat) on an upper central incisor often causes the opposite joint area to develop problems. **Mix’m up:** One could place a cotton swab between the molars on one side and between bicuspids on the other and a different set of muscles would be affected. The point being, when a combination of different teeth hit during SC, different muscles will become sore. Playing with Q-tips can teach you a lot about occlusomuscular problems.

If a patient had active TMJ problems, they would have exaggerated discomfort from squeezing on Q-tips, because the muscles would already be sore (spastic). In other words, if a muscle were spastic, any contraction of that muscle would cause pain.

Tooth soreness is nearly always cause by SC trauma. Everyone clenches, but not everyone clenches enough to produce trauma. Trauma is a relative term meaning different things to different people. One dentist may see traumatic SC, where another dentist may not. Therefore, (for easier understanding) traumatic SC or SC trauma means that one is SC enough to produce a ‘recognizable’ symptom.

Many of our colleagues will question that SC always causes tooth soreness, mainly because SC has been left out as ‘a cause’ in our training. They would say, “What about abscessed teeth, or periodontal disease, pulpitis or injury?” but SC is usually the cause of those very problems. A tooth can have an abscess at the end of its root or pulpitis that is caused by tooth decay. Getting too close to the pulp when filling a tooth is often blamed,
but it can also be SC trauma that causes the problem because the cap or filling may be ‘too high’!

Destructive periodontal disease does not cause tooth soreness either, because one cannot have this problem without SC trauma. An injured tooth will usually heal if it is not being clenched on. Gingivitis will not cause a tooth to be sore without SC. Therefore, except for dental decay, tooth soreness usually indicates SC trauma. The Q-tip and the ToothS-looth™ are great diagnostic tools because they detect muscle spasms and tooth problems! When tooth soreness is produce when biting on these tools you can bet that SC trauma is the cause.

**Palpating the muscles** of the face can also reveal spastic muscles caused by SC. One can press in different places, especially the places where there seems to be pain. If the area is tender to finger pressure it is a very good sign that the pain is caused by SC. A spastic temporal muscle will cause a temporal headache. Not finding a tender muscle does not rule out a spastic muscle because some muscles are too deep to palpate. This is where squeezing on a cotton swab or cotton roll works better, which exposes all spastic muscles, even the deep ones.

**Tooth Sensitivity:** For the same reason mentioned above, a tooth may be sore and/or sensitive to cold; SC trauma causes both. Sensitivity is usually blamed on other things, but except for dental decay or injury, SC is usually the cause.

One can differentiate sensitivity from pulpal abscess (dead pulp) with ice or a pulp tester. If the pulp is not dead, there is a 99.9 percent chance it is SC trauma. SC trauma is always suspected.

*A simple ‘two tooth’ anterior deprogrammer* (AD) will confirm or eliminate SC as the cause of the patient’s problem. This is because the device allows the condyles to seat in the correct position and prevents the posterior teeth from contacting. It the tooth gets better, you can then start appropriate treatment such as equilibration or a balance bite splint; if not, the pulp may be beyond help and will need root canal therapy. On the other hand, by using an AD you may be able to avoid a root canal.

*Using an AD will also convince you that tooth looseness is cause by SC trauma. Check tooth looseness as describe earlier then use an AD for a couple of days and you will find that the tooth or teeth are tighter. Why? Because SC has been eliminated.*
Gum recession reveals two things: (1) Brushing with too much toothpaste too often and (2) SC trauma. Gum recession is usually a combination of both, but recession can occur from a predominance of one or the other. SC trauma weakens the gum tissues on the compression side making it more susceptible to brushing trauma. Most right-handers will have more recession on the upper left cuspid and left-handers on the right cuspid because they spend more time brushing in those areas.

It is hard to change brushing habits by using a softer toothbrush they will simply spend more time brushing with more pressure. There seems to be a feeling they are used to, and the softer brush does not satisfy them. When you see this, you can at least advise the patient to quite using toothpaste too often. I published an article on this in the Louisiana Dental Journal.

History Taking: Let us be sure we are using the same language when we talk about signs and symptoms. **Signs** are things the examiner sees, feels, or hears. They may not be obvious to patients. Often, signs are things that help a clinician predict trouble ahead, which are subtle problems that patients are unaware of. **Symptoms** are things patients feel or sense. They may not be obvious to the examiner. In other words, symptoms are the problems people experience. The clinician can find them through history taking. Sometimes a sign can be a symptom or conversely.

Signs are either obvious or subtle. Finding obvious signs is easy. What separates the highly skilled from the rest is the ability to see the subtle signs and expose the subtle symptoms (through history taking). This does not mean that subtle signs and symptoms are hard to detect; it may be hard for one clinician and easy for another.

Doctors need to get as much information about symptoms and previous treatment from patients as possible because it will help them with diagnosis. This is especially true in treating occlusomuscular problems. I have used a questionnaire on my web site for several years and have received hundreds of replies. I have gathered much information for history taking.

I can even do some diagnosing for people from Internet requests, but I am of course limited without a physical exam. Yet, it is amazing how accurate history taking can point directly to where and what SC problems exist. The more a doctor knows about the SC syndrome that is, the more he or she understands occlusomuscular physiology and dysfunction the more important history taking becomes.

The following questions were the ones I used in my web site. Anyone can use these questions to help figure out where the pain is and if it is related to TMJ.
**Female or Male?** There is a difference in the way men and women react to SC trauma. Women usually have more muscle pain (headaches, facial pain, etc.), while men seem to damage joints and teeth with less pain; but don’t hold this as gospel.

**Age?** Age makes a big difference in the way we clench and how long we have clenched.

**How often do you have headaches?** This tells me how often you clench. If you do not have headaches it does not mean you are not SC. We have different thresholds to pain. Men usually don’t seem to notice headaches as much. **Which side?** This tells me which side is the problem joint.

**How often do you have neck aches?** This tells me that you clench in a protrusive direction (on front teeth), you may be pushing against something uncomfortable in the front part of your mouth. **Which side?** This tells me which side of the front part of the mouth you are SC against. Usually, if a left neck muscle hurts, you are SC on the right front, and so on.

**How often do you have earaches?** An earache is often TM joint pain. **Which side?** If the left side has an earache, the left joint may be hurting. **Which ear has less hearing capacity?** It is common to have reduced hearing in long term SC next to a problem joint.

**Do you have ringing in your ear?** **Which ear?** It is common to have ringing next to a problem joint.

**Do you have vertigo or dizziness?** SC could cause this.

**Which ear collects more earwax?** Sometimes patients will accumulate more earwax next to a problem joint. I don’t know why, but it could be due to joint inflammation passing into the ear chamber.

**How often does your shoulder ache?** This usually means that the person is SC in protrusive way that is, the lower jaw is protruding past the upper front teeth or pushing against the upper anterior teeth, but then again, a shoulder ache may have nothing to do with SC. **Which side?** This can indicate which way one is protruding the jaw that is, if SC is the cause.

**Does your jaw ever hurt?** This is a good sign of SC trauma. **Which side?** Tells me which side has spastic muscles.

**Does your jaw ever pop or click?** This always indicates that you are a clencher. **Which side?** Usually, if the left side clicks, the left side is the problem joint. However
this can vary. Changing a patient’s bite can shift the SC trauma. It is not a good indicator for detecting which joint is the problems joint.

**How often do you have facial pain?** Facial pain means facial muscles are spastic, which is nearly always from SC trauma. Of course, the pain could be from facial nerve damage (neuralgia) but this is rare when compared to SC trauma. Which side? If you have facial pain on the right, the right joint is the problem joint.

**Do you have receding gums?** Receding gums can occur from over brushing or from SC, but recession is usually a combination of the two. Where? Recession usually occurs on the side opposite the problems joint but not always.

**Are any of your teeth sensitive?** This usually indicates that the patient is SC on certain teeth, which cause them to be sensitive.

**Which joint is sore?** (Joint-pressure exam.) Usually the problem joint is sorer but not always. Sometime the ‘good’ joint will have a fluid build up when it is trying to compensate for the bad joint; it’s a defensive activity but more often this is caused by complex SC trauma because of changing a patients bite.

**Does your jaw swing to the right or left?** This indicates long term SC but does not mean you are presently SC, but it occasionally means that the joint swings away from a problem joint.

**Does the jaw make an initial jog or movement to the right or left when first opening?** Which way does it jog? When there is an initial jog, it will be away from a problem joint. This usually indicates that the problem joint has active inflammation in a young adult. In an older person, it may be permanent joint damage and not acute inflammation.

**Press on muscles** in the jaw area, the forehead area, facial area, and the temporal area, and then answer the following question. Are these tender areas on the right or left side? Tender muscles suggest that SC trauma is causing muscle tenderness but not enough to cause facial or jaw pain. The tender muscle will be on the side of the problem joint.

Some people hurt on both sides, that is, they have symptoms on both sides; but one side will be worse. This can occur for several reasons. Orthodontics and dental repairs that have changed one’s bite can cause SC trauma on both sides. An unbalanced night guard can cause this.
All the questions are important. For example, if the questionnaire does not reveal neck pain, it could indicate that the patient does not clench on front teeth; however, negative answers should be checked out with appropriate physical exams.

**Crossover** simply means the jaw crossings over to one side or the other. Crossover can reveal many bad things. If back teeth keep front teeth apart, SC can cause a lot muscle problem as I have already mentioned.

Crossover in centric is very different from crossover in an acquired bite. Because of this, equilibration often fails to balance the jaw, since we inadvertently try to balance teeth without concentrating on centric movements. *(We try to balance in an acquired bite position, which does not begin to find posterior guidance.)*

Crossover, when awake, will not reveal centric crossover, which is where the troublesome posterior guidance hides, the very thing we need to eliminate. Not knowing this important difference is why equilibration and bite splints often get an unjustified bad name. Therefore, I will try to make this very important point very clear.

**Rest Areas** may be a new term to you. Look in a mirror and put your anterior teeth in an end-to-end position, you may find matching patterns, these are *Rest Areas*. Rest Areas occur because sleepclenchers will get tired from SC on back teeth in centric and move to anterior teeth to literally 'rest.' They will do a little grinding and over time creating the pattern-like areas. A person has to do a lot of SC to get rest areas. *Have your patient hold on those teeth for a while and he or she may notice soreness back of the neck and shoulders.*

Condyle and Socket Migration: Around age 12, the translating and protrusive condyle guidance angles are supposedly established. They are dependent on the final eruption of the upper and lower cuspids. The cuspid and condylar guidance angle is the same or should be. Early lost of baby teeth may alter this, but regardless, the angles are completed around 12 or 13. The joints are located in the same place on each side, that is, a kid up to his or her late teens will rarely have deviation.

*However, when we clench for a long time, one joint will migrate backward, it usually migrates upward and backwards. This creates a jaw swing on opening. This migration causes a change in the shape of the ramus and condyle; that is, the jaw will be longer on the migrated side.*
When models are mounded by facebow, the models may not look normal. For example, if the right joint has migrated, the models will be slanted downward to the right and to the left of the centerline. How did this joint misalignment occur? No one knows for sure, but I suspect that a lifetime of SC pressure has the power to move and reshape bone. There is not enough research to determine if we are born with this asymmetry, but I have not observed a child deviating to one side. At any rate, long term SC makes sense.

Joint migration is not the only thing that happens. The **translating guidance angle** often changes. Since the original condylar guidance angle was established by the eruption of the cuspids, movement of cuspids can change the translating guidance angle. Continued eruption of teeth (from chronic SC) on the secondary side causes steeper cuspid guidance, which in turn cause the translating guidance to become steeper.

Putting this in other words, it is said in the literature that the condylar guidance angle is established by the age of twelve, but that does not mean that it will stay that way; I don’t believe it does. I am sure that SC not only causes joint migration, but can also change the condylar guidance angle to accommodate the tooth guidance of the acquired bite we develop.

Not only does cuspid guidance increase in steepness (through SC), the posterior teeth develop a steeper guidance too. This is why when the jaw goes into a centric position there will be a lot of posterior guidance. It also accounts for the *Too tall teeth* you will learn about.

As you know a translating condyle is one that slides down its slope, while the other condyle stays in place. The one that stays in place is called the rotating condyle, that is, it essentially stays in place. In a balanced bite condyles and disc seat correctly in their sockets, but in most of us, at least one condyle will rest down the incline when our teeth are closed in our acquire bite. Sometimes both will be down the inclines, but one will be further.

When a joint has migrated, the translation guidance angle and protrusive guidance angle will not be the same. This may sound trivial but it will become important later on. You can observe this by examining various skulls. Translate one condyle and then the other. One side will usually have **more space between the posterior teeth**. The side that has more space has steeper condylar guidance. The other side will have a more shallow guidance. This helped me understand the wide variation in condylar guidances. If you think about this, you will understand why I take left and right translating bite registrations as
well as a protrusive (anterior end to end) bite registration. I could set the articulator properly this way.

Now that you understand why some people deviate to one side, it would help to practice this observation. You can practice this by watching patients. It only takes a few seconds. You will quickly get an idea of the percentage of people who deviate. This simple telltale sign will put you on alert that you may have a sleepclencher and will prompt you to do some more checking.

So, why is this important? Active sleepclenching constitute most of your problem patients. I don’t mean to imply that every sleepclencher is a problem but he or she may be a potential problem. You will start marking patients as potential problem patients when you realize that some sleepclenchers can make you look like a ‘not so good’ dentist. You will learn why you need to be careful in some procedures.

Why? You may ask. For example, SC trauma causes advanced periodontal disease. (I will explain why later.) Therefore, I did a complete exam to get the SC characteristics of each patient and took care of SC problems before I did anything else. Before I learned about the SC syndrome, I made all kinds of mistakes. I often jumped into surgery too soon. I could not understand why some cases failed.

As a general dentist, you can advise the patient that since they clench, they may have problems with the bridge (or what ever). This will open up the possibility to do some equilibration or splint therapy before treatment; a wonderful thing for the patient as well as saving you lot of time consuming trouble. Crown and bridge is not the only area where a sleepclencher can suffer. SC trauma usually causes filling problems, periodontal treatment problems, and cosmetic treatment problems; it even causes denture problems.

OK! Maybe you are not convinced about this; I may be getting ahead of myself, but hang on I will make all of this clear. Lets talk about a Jogs and Deviation on opening.

You can learn to recognize a jog by observing many patients. A jog on opening as opposed to deviation will correlate with the Joint Pressure Exam. A Jog is a distinct movement away from one side; the patient is avoiding a joint. It usually indicates the tender joint you detected with Joint Pressure Exam. The tender joint is being traumatized by SC and is nearly always on the “too tall side”—the sided that touches first in centric—which is the side that touches first during SC.

After the jog there can be movement in any direction. For example, it the movement is back to the centerline, deviation is not present. If there is continued jaw movement in the direction of the
jog there is deviation. However, movement to opposite side of the centerline raises a flag, be-
cause it usually indicates iatrogenic problems. That is, someone has severely changed the bite,
possibly moving the taller teeth to the other side. At any rate, a jog means active SC; that is,

enough SC to traumatize the disc/joint.

I have treated a lot cases that had a distinct jog, which went away when occlusal therapy was
completed. Sometimes, older patients that have permanent joint damage the jog may not go away
even thought the patient is comfortable. Most of the time, patients that had a jog and deviation
will lose the jog but kept the deviation.

Deviation does not mean active SC; however if a person is suffering from TMJ pain, the jaw de-
viant toward the muscle pain side. Keep in mind that deviation as opposed to a jog always indi-
cated that one TM joint is located further back that the other.

**Damage to a disc** and or joint inflammation (a type of arthritis) may be temporary or
permanent. Temporary damage will heal when jaw function is restored but it will not heal
with unbalanced mouth guards or poor equilibration. A damaged disc, such as a displaced
disc, will cause one to favor a joint. The joint may or may not have inflammation. In ei-
ther case, one needs occlusal therapy to balance the jaw, which is the only therapy that
will restore function. Any treatment that does not restore proper jaw function will not
promote healing.

Even when a disc has permanent damage, such as a perforation or the disc has become
attached its socket (glued so to speak), the patient can still be made comfortable with
careful occlusal therapy to create proper jaw function.

*A perforation* always occurs near the lateral pole in a joint that has migrated (Autopsied
specimens show the perforation near the lateral pole.)

**When a disc is attached to its socket**, it is usually displaced forward and inside (medi-
ally). The disc is not being used, so to speak. It’s just sitting there not moving very much,
and eventually, adhesions glue it to the socket. Sometimes these adhesions will go away
when the jaw is balanced, that is, when function is restored. However, sometimes, an oral
surgeon has to go into the joint to remove adhesions to free up the disc; however, in my
opinion, this should not be done until the jaw has been balanced and has time to heal.

Since disc position will change after removing adhesion, the jaw should be balanced after
the procedure. Equilibration should always follow surgical procedures to the jaw; this
includes surgical orthodontic treatment as well.

**Most of us have one loose or damaged disc**. Some of us will develop arthritic-like pain
in that joint. It will feel like an earache when the joint is inflamed or when the small mus-
cle that help controls the disc apparatus become spastic. It may be accompanied with a
headache, a clicking noise, ringing in the ear, dizziness, a temporary hearing loss, and so on. The pain and other problems are episodic, but it will occur more often, and with more intensity, if traumatic SC continues.

Mild SC is not necessarily traumatic, but heavy SC is always traumatic. The joint will be tender or painful when inflammation is acute, just like any other acute arthritic joint. In any case, the jog indicates a problem. Some of us don’t clench enough to cause noticeable problems, but that does not eliminate the possibility of a sloppy disc. However, these problems are usually repairable by proper occlusal therapy.

Most of us only have one problem joint, but a few people have two troubled joints. They can experience TMJ problems on both sides. The jaw will jog away from the sore joint (most inflamed) and occasionally, have a 'double jog.' The first jog favors the sorest joint. Jaw pain, headaches, muscle aches, earaches, joint pain, facial pain, and clicking/popping on both sides indicate two problem TM joints. I believe that most of these cases are caused by what we do to patients (iatrogenic). I don’t think that they occur naturally. Wearing an unbalanced bite appliance too long or reconstruction, which change the bite enough to affect the way joints work, will cause double-sided TMJ problems.

We have to be careful in all dental procedures because they can inadvertently exacerbate existing problems or cause patients to develop problems on both sides, such as assuming that a soft full mouth night guard will ease our patient’s SC or not understanding that wearing an unbalanced mouthpiece long term can cause the patient to shift the SC trauma to the other side. Some patients may seem to adapt OK to unbalanced mouth guards, but be assured, the device is causing new unnoticed problems.

So, one can detect deviations and jogs on opening thru practice. I rarely miss a jog because I have seen hundreds of them. Therefore, it is worth a try have your patient to open and close several times and observe what happens. It can save you much trouble.

**I though the joints were parallel and opposite**

I discovered this thru the countless use of facebow transfers. When the model was not centered on the articulator, I assumed that I had not done it accurately, but as I kept retaking the measurement, I realized that the **joints on the articulator are parallel, while the joints in patients are not.**

By examining skulls, (note the positions of the joint sockets in the photo) I found that one joint is often further back, higher and farther out than the other. In other words, one side of the
jaw is longer, which causes it to swing ‘away’ from itself. I know I have already talked about this, I though it may be of interest to you to examine a few skulls to see for your- 
self.

Dental articulators don’t allow adjustment for this, but even though we don’t really need to account for this error, the position of the mounted models (by facebow transfer) can tell us a lot about the patient.

For example, (as shown above) if the models are slanted downward to one side we can assume that the joint in the patient is higher than the other and if the model is off center to one side the mandible is longer and further back on one side. I can also see Rest Areas to determine which side of his neck is likely to be sore. We can see facet wear. We can look for gum recession and get additional information concerning which teeth are being clenched on, and/or if he has toothpaste damage.

This lack of articulator adjustments gives us some wonderful diagnostic information. When I learned this it was like having the patient with me. All the above point to SC trauma. Facebow mounted models show us all kinds of things.

**Tooth Looseness Exam:** Although I have mentioned ‘tooth tapping,’ tooth looseness is a sure way to tell you that your patient is presently SC; in fact, it is the most important method to detect active SC. Tooth looseness is detected by vibration and sound.

First, I tap lightly on the facial surface of each tooth using a dental mirror handle to feel the vibration with a finger on the tongue side of a tooth.

I always showed my patients this method (*let them feel the vibration*) and taught them how to do it. It involved them in treatment and offered understanding. Once you teach your patient it is easy for them to show someone else. The other technique was to let my patients hear the different sounds when tapping on teeth. Teeth not affected by SC will have a high-pitched sound. Teeth affected by SC will have a dull sound.

I found that telling people how to do this on my web site was not as easy as I thought. Very few people seem to understand. Doing it successfully without help may be difficult.

Colleagues have questioned both of these techniques claiming that periodontal disease is the cause of looseness; it is one of those dental dogmas that won’t go away. However, those dentists who have not learned that it is SC trauma that causes periodontal disease have it backwards. At any rate, it’s archaic thinking. Loose teeth in periodontal disease are always a result of SC trauma.
**Tooth taping**, is a wonderful exam, which can be done by anyone. If a tooth is tender, it is probably SC trauma. Looseness or sound indicate SC trauma also. Most people will come up with the same scale of looseness. For example, no vibration or a high-pitched sound would indicate SC does not bother the tooth. We could call it a 0. A very dull sound or lots of vibration could be called a 4, and so on. You would be surprised how close my staff, patients, and I agreed on the degree of looseness as related to the amount of SC trauma.

This is quite different from the old method we used, where we grasped a tooth between a thumb and finger and tried to wiggle it to come up with an idea of looseness, but we missed the very important subtle looseness, which tells us what is really going on. For example, subtle looseness can point to SC, while lots of looseness often points to periodontal pockets.

I used the following scale: Teeth with a “0” reading are not affected by SC, a “1” is a minor degree. As you go up the scale, a tooth is subjected to more SC trauma; a “4” gets lots of SC trauma.

Forgive me for all this redundancy, but I cannot over emphasize the value of this simple exam. It can be done by anyone, but dentists seldom use it. (1) It showed my patients that they were SC. (2) It also showed them which teeth they were SC on. (3) It is also valuable to detect the efficacy of my occlusal therapy in balancing a patient’s jaw (occlusion).

When I found a tooth that showed SC trauma, the patient, and I knew that the bite needed refinement. If it was a posterior tooth, we both knew the jaw still had posterior guidance. If it were an anterior tooth, we knew we had an uncomfortable anterior guidance.

It has been my experience, together with colleagues, that using the Tanner methods I significantly decrease traumatic SC as I balance one’s occlusion. Many patients don’t seem to clench but that is misleading. I don’t believe we stop SC per se, just traumatic SC. At any rate, TMJ problems go away, and joints heal when the jaw is balanced. Is a balanced jaw stable? Not always, because people continue to clench, although without pain. Heavy SC will unbalance the jaw eventually; this is the reason I routinely evaluate patients every 3 to 12 months (depending of the patient) to refine the their bite.

Under any circumstances, the mobility exam (tapping exam) is essential for occlusal therapy. The mobility test can vary from day to day or week to week since people vary their SC intensity. You can check it one day then check it again a few days later and get a
different sound or vibration. It varies because people have different levels of stress from day to day or week to week. Regardless, it shows SC and it shows that stress levels vary.

When I was using the balanced Tanner appliance (before I became good at equilibration) I used the ‘tapping’ test to determine teeth that were still under some pressure (just as I used it in equilibration). The standard way is to look at the intensity of the ribbon mark to determine excessive pressure, but the tapping test allowed more refinement. It is a fantastic exam.

**The Joint Pressure Exam:** Have your patient swing the jaw side to side rapidly with the teeth slightly apart. Movement and speed of movement will be retarded if you open too wide. One side is usually sorer. Sometimes both will be tender, but one side will be more so. On a non-symptomatic patient, that is, a patient not complaining about TMJ problems, a tender joint means that the he or she is SC enough to irritate a joint even thought they are not aware of doing so. Patients complaining of pain (when a joint is acutely inflamed), will have a very sensitive joint. (You can also open and close rapidly while placing your fingers next to the joint as indicated above.)

The joint pressure exam is easy to do. It tells us that the patient is presently SC enough to irritate the disc/joint. A balanced bite does not produce tenderness through SC. Occasionally there will be two sore joints. This occurs when there is severe inflammation in a joint during active TMJ problems.

The exam exposes several important things: (1) The closeness of the ear chamber and joint, which explains why joint aches feel like earaches, (2) It make it easy to understand that fluid from the joint can enter the ear chamber, which can affect inter-ear apparatus and (3) It opens the idea that the tympanic ligament may also contribute to inter-ear problems (hearing problems, dizziness, and tinnitus). See the photo below.
**Are these simple exams too simple for Dentists?** No indeed! These simple exams and observations will give you much information concerning SC trauma. It can tell us where the SC trauma is being directed as well as its intensity. Learning to recognize the subtle signs and symptoms of SC will make your life in dentistry a lot better. It is a lot better than wasting your patient’s time, and money, with MRIs and Transcranials, (which is a cover-up for not knowing much about TMJ).

Using the simple exams usually prompted my patients to do something before they had serious problems. My ability to recognize problems vastly improved as I used them. I am not practicing preventive dentistry if I allow the subtle signs and symptoms to become serious ones. Changes in joint edema, tooth mobility, and patient reported symptoms became obvious to me by way of the above exams, and helped me to do better dentistry. They not only showed me early problems, but they were very useful in determining the efficacy of my bite-therapy.

Some dentists are opposed to what I say and they have many reasons to do so. Some claim that occlusion (one’s bite) has nothing to do with TMJ problems (much less other dental problems). They are correct in their thinking, but are misled by incorrect data and/or experience. Malocclusion (an unbalanced bite) does not cause TMJ problems by itself; however, SC on an unbalanced bite can cause problems.

If a dentist followed the examination techniques and treatment recommendations mentioned in this book, it would change his or hers thinking regarding a balanced jaw. He or she would depend on these exams for diagnosis instead of MRIs and Transcranial radiographs, which offer very little help.

When they start using the simple but effective exams that I have found so helpful in my practice, it will become obvious how much the SC trauma affects dentistry. They would change many treatment procedures. However, the biggest hurdle for any dentist is buying the unquestionable fact that SC trauma is the basic cause of most dental problems.

Signs and symptoms are either obvious or subtle. Finding obvious signs and symptoms is easy. What separates a highly skilled dentist from the rest is the ability to detect the subtle signs and expose the subtle symptoms.

**More on SC:** You may wonder if SC can be of any use: (1) It provides early detection signs and symptoms as tools for examination, (2) It provides a method of determining the stress levels of people living or dead and, (3) It is also important in positioning teeth during the eruption period.

Equilibration is essential following some (if not all) orthodontic treatment to create a balance bite. It will reduce the time retainers have to be used (or eliminate their use entirely). This is not strange to dentists knowledgeable in joint physiology. Retainers do not create
a balanced bite; they only maintain a good ’looking’ unbalanced bite (great for creating TMJ problems). Sleeping with retainers that prevent posterior contact will cause a significant increase in posterior imbalance. It is just as bad as long-term use of anterior de-programmers.

SC helps align teeth during the eruption process. Although we use anterior deprogrammers made on two upper front teeth to help kids having TMJ pain, long-term use would interfere with eruption process because the kid would lose the positioning effects of SC, which is needed for proper joint development.

**Could SC be one of natures tools** to point out iatrogenic problems or one of nature’s ways to remind us that we need to glance at ourselves, at our behavior or our attitude about what is going on in our lives? We may even need to look into our unconscious mind (which I believe is Gods bulletin-board), to see if there is a physic or a physical problem we need to handle.

I believe the SC syndrome will someday attract the attention of anthropologists and depth psychologists. Anthropology can examine religious and political practices of people (to name only two fields of research), and determine if increased environmental stress increases SC. Depth psychology can explore stress caused by problems between the conscious and unconscious mind.

At any rate, these types of research will find the signs and symptoms of SC very useful. The avenues of research are mind-boggling.

Medicine has not realized the effects of SC trauma. SC trauma is a primary cause of spastic torticollis. Look how long it took us to acknowledge that plaque causes gingivitis and calculus, when Dr. C.C. Bass (a physician) reported it; it took about 10 years.

Stress and inadvertent changes is one’s bite can affect SC trauma. Many of us are aware of SC, but may not be aware of how common SC is or how much damage it causes. My patients had heard about SC, but they usually denied that they did *such-a-thing*. Yet, I never saw a patient who did not show signs of SC or reveal symptoms thru history taking.

To make matters worse, **inadvertent changes in a patient’s bite** can exacerbate SC problems. We often change the way teeth fit with dental procedures. Changing the way teeth fit will change the way the jaw functions. Changing one’s bite can increase damage from SC trauma. It gives a patient something new to clench on. Whether a change in bite causes problems depends on the patient’s ability to adapt to the change. Some patients can adapt to gross changes, but some get into serious trouble with slight changes.

Luckily, some problems we cause (by changing a patients bite) are temporary because patients rearrange their bite through SC, creating a more comfortable bite.
A heavy clencher will vigorously attack a change in bite, while a light clencher only plays with the same degree of change; however, these changes in bite can cause TMJ problems ‘down the road.’

Although SC is constant (discounting occasional episodes of heavy SC), people vary the intensity of SC on different nights. We vary the intensity of SC from night to night (or week to week); however, it’s the collective SC that makes us a light or heavy clencher. When I understand my patient’s collective SC I can successfully treat and avoid treatment problems. The reason we vary our normal SC is that our stress changes in our day-to-day living, but don’t confuse normal changes in SC (changes in daily stress) with episodical stress (a severe increase in stress and SC).

I said in the beginning that SC trauma causes many dental problems, but I’m convinced that all dental problems are caused by or influenced by SC; even dental decay, gingivitis and accidents can be influenced by SC trauma.

**Orthodontists** probably don’t like some of the things I say in this book. Believe me, orthodontists are very skilled clinicians. It takes much training to learn to do what they do. However, *the big throne-in-the-side* in orthodontics is SC trauma. Since dental students don’t receive adequate training in jaw function and jaw dysfunction, it’s no wonder that we overlook SC trauma. Unfortunately, orthodontists overlook it too.

It is no mystery that orthodontics can cause occlusomuscular problems. Changing a bite to another unbalanced bite, no matter how it is done, will cause problems, whether the patient notices it or not. It always exacerbates existing SC problems. How much of a problem the new unbalanced bite causes, depends on ones pattern of SC. I suspect many orthodontists are not aware of how much SC causes treatment problems.

Preexisting moderate to heavy clenchers start those unexplained treatment problems, such as, those patients who don’t seem to respond to appliance adjustments, those who develop facial and joint pain and those who will not hold tooth position when the case is completed.

I have never seen a balanced jaw following orthodontic treatment. To put it another way, orthodontics *cannot* balance a person’s jaw. It is impossible to do so. Only equilibration can do that. All orthodontic treatment should be followed by equilibration.

We learned in dental school the various classifications of occlusions. There is the Class I, where teeth look like they fit together just right, and the Class II, where there is a lot of horizontal space between upper and lower anterior teeth (when the jaw is in a centric position).
Much to my surprise, I learned that a Class I bite can be just as bad as a Class II, that is, a Class I clencher can cause just as many problems as a Class II clencher. Bites are bad because teeth are unbalanced, not how they appear. A Class I bite, which is supposed to be a perfect bite, is rarely if ever a balanced one. An unbalanced bite always means an unbalanced jaw. An unbalanced jaw is the playing court for Occlusomuscular Disease. All you need to do is to add plenty of SC to create problems.

Before I understood TM joint function/dysfunction, a bite that looked good was a good bite. However, nothing could be further from the truth. For example, many of the e-mails I get say that their dentist told them that they had a good bite, but appearance can be misleading. Many beautiful-looking bites can be just as unbalanced as not-so-good-looking-bites. The jaw can be unbalanced no matter how teeth appear to fit together. Thus, classification of bites *confuses* dentists. Bites are only as good as their functionality. A Class I bite may in fact be a slight or moderate Class II.

When the expects classified bites, they fail to consider *centric* relations. That is, when we were taught about bite classification, they forgot to tell us to check bites in a centric position rather than an acquired position. Class I and Class II only gives an estimate how upper and lower teeth are related; neither bite depicts function.

Orthodontists claim that they do not cause TMJ problems. Nevertheless, orthodontic treatments change unbalanced bites to another better looking unbalanced bite. Orthodontic treatment does not balance the jaw, it only gives a clencher something new to clench on, this is why I’m opposed to orthodontia as a method of treatment for TMJ problems. It cannot balance ones jaw, no matter how the teeth are moved around or how great they look. *There is a solution* of this dilemma, however: The bite can be balanced after orthodontic procedures by way of equilibration, to balance the jaw. Keep in mind that patients adapt differently to changes in a bite. Some people do not develop noticeable problems after orthodontic treatment, but many do. Most patients will create a new acquired bite over time unless equilibrated.

One type of orthodontic treatment is called the *four-on-the floor* by occlusal therapist. When a patient has a lot of overjet, that is, the upper teeth stick out from the lower teeth more than normal some orthodontists believe that by removing four first bicuspids they can move the upper front six teeth back to create an attractive bite; but when they do this, they cause the upper front six teeth to become too straight (up and down) compared with the forward slant that is needed to guide the jaw. This causes the anterior guidance (or cuspid guidance) to be too steep. This is a classic cause of TMJ problems.

This method of treatment increases the anterior tooth guidance angles. When we increase the anterior guidance angle, increased posterior guidance follows. Eliminating posterior guidance is what we need to do to stop SC trauma and thus SC problems.
Since thumb or finger sucking causes many of the overjet cases, it seems to me that moving the lower anterior teeth forward would be the proper thing to do (before equilibration).

This is a letter from someone to illustrate my point:

“After orthodontic treatment 7 years ago I have had nothing but problems; 9 root canals, 4 on virgin teeth. My bite has been terrible since my orthodontic treatment. I am in desperate need of help to keep my teeth. Since orthodontic treatment I clench my teeth at night. Could you please direct me to a dentist near me who can help me please? I am desperate. I have seen 8 dentists so far with no luck. I believe my problem may be SC after reading your web site but I have no Idea where to go for help. I am from a small town in Montana. I am willing to travel to get help but I don't know where to go. Can you help in directing me to some one who can help? Thank you in advance.”

This is one of just one of similar e-mails I have received.

Most occlusal therapists worry about the new orthodontic procedure that tries to lengthen the lower jaw to reduce the overjet (horizontal space between upper and lower teeth). In my opinion it is foolish to interfere with the TM joint development. It places the condyle on bottom of the sockets slope (condylar eminence). If a kid clenches in that position it would probably damage the disc; I fear that kids will develop serious TMJ problems later on. Look out for law suites! Anyone who understands TM Joint function and SC trauma would not use such an appliance. It is refereed to as the ‘mousetrap’ appliance to those of us who think it is a bad idea.

Even removing a tooth can cause TMJ problems. Sometimes when we remove a posterior tooth, it can change the SC patterns of a patient. A heavy clencher can cause some serious TMJ problems.

A 50-year-old male had a third molar removed six months before. He developed swelling in the right joint and a large swelling in his right neck. He had been treated with antibiotics and other unknown medication for six months without help. After a few simple exams it was obvious that he had a severe problem in his right joint. Since I could not treat him with a bite splint or equilibration (I was in a small village in Guatemala), I gave him four .5 mg tabs of dexamethasone and instructed him to take one tab twice a day for two days.

He returned in two days and his symptoms were gone. (He thought I was some kind of magic medicine man.) I may have been a little lucky in this case since I would normally use 1.0 mg doses rather than 0.5 mg doses in his advanced case, but that was all I had with me at the time. I saw him several months later and he had had no further problems.

This is an important point. When patients develop serious TMJ problems, caused by an episode of heavy SC, the right medication can reduce the joint inflammation and stop the
pain. If the pain was from an “episode” of SC this will always work; however, if it is chronic heavy SC, it will only help for a few days or not help at all.

Sometime an episode of heavy SC that will precipitate TMJ pain and when episode is over he or she may still clench enough to keep the pain (like the case mentioned above). You might say that their “normal” SC is enough to keep the inflamed joint irritated. This is when medication works best.

Head injuries can cause severe TMJ problems, but it depends on ones SC. A heavy clencher can develop serious problems, while a light clencher won’t. This makes litigation confusing in accidents cases. The injury makes preexisting problems worse. Inappropriate treatment can make things worse. On the other hand, if the jaw is balanced (with appropriate treatment), joints will heal. In other words, one does not have to have eternal TMJ.

A patient came to me who had been in an auto accident and claimed that she had developed TMJ problems. History taking revealed that she had a preexisting TMJ problem, I balanced her jaw using a Tanner bite appliance; and her problems went away. Her attorney sent her to another dentist who replaced the Tanner appliance with an unbalanced mouth guard. Her problems came back and she won a sizable lawsuit. She came back later and asked me if I would help her; of course I did.

**How does SC cause problems?** We can squeeze on teeth during the day or while we sleep, but there is a big difference between the two.

Most of us have a favorite side to chew on because it’s more comfortable. It’s more comfortable because it’s more functional. Our acquired bite, as you know, is the bite we have developed over the years. Constant SC creates it. The acquired bite is the chewing-bite. It is never a ‘balanced’ bite; that is, it is not synchronized with the TM joints. We can better understand this if we examine our own chewing habits.

Examine your acquired bite by closing your teeth together and slide right and left. Some of you may notice that one side will slide better than the other, which may cause you to chew more on the more comfortable side. Of course, tooth problems (such as a sore tooth) will affect the way we chew but aside that, most of us favor one side.

Now put your jaw in a centric position and slide side to side (be sure you keep the jaw in centric). You will notice that one side is less comfortable. This is because the uncomfortable side has steeper tooth guidance; in fact, posterior teeth will be guiding the jaw instead of cuspids. (*This what I call ‘posterior guidance.’*)
This is what happens in SC. It took me a while to understand that SC had a very different functionality than jaw function when awake. As you will see, SC, which is in centric, causes most of the SC trauma that causes TMJ and other problems.

We clench in our acquired bite when we are awake but we don’t cause trauma because the teeth are hitting at the same time; that is there are no ‘prematurities’ in an acquired bite, and the condyles are seated somewhere on the condylar guidance of the fossa; all this *simulates* a balanced bite. Therefore, daytime clenching does not cause TMJ problems. People usually do this when doing a tough physical or mental job (like weight lifting). This type of clenching *can* cause jaw muscle enlargement and increased bone around posterior teeth.

However, before we go any further, I want to explain what I mean by ‘centric.’ There are so many different ‘definitions’ for centric that most dentists get confused.

The following is a typical exchange I have with a patient, to brief them on the difference in the types of clenching (the different things they do with their teeth when they sleep). I want them to understand the very important term ‘**centric**’ to understand what SC trauma can do.

"Mrs. Jones, **Centric** is when both joints are functioning perfectly. That is, when the 'balls' of the lower jaw, the condyles as we dentists call them, are fitting precisely in their sockets, which we call the temporal fosse. When this occurs lower and upper teeth don't fit together like they do while chewing. There's a discrepancy--maybe a fraction of an inch difference. You may have noticed this when viciously chewing gum or food when all the sudden you hit a tooth seems to be the way; it's like finding a rock in your food. You have unconsciously shifted to Centric. The brain has programmed the chewing muscles to stay within the chewing pattern; you seldom get out of it, but this is not true when you sleep. The chewing program quits working when we sleep; we chew, so to speak, on those 'in the way teeth' causing many problems. The severity of the problems depends on how much squeezing pressure and how long we have been doing it. Most of my patients refused to believe that they clench, but I have never seen a patient that did not clench. I do some SC too; so don't be embarrassed while I discuss SC. Some of us are mild clenchers and some of us are heavy clenchers or somewhere between the two, but all of us do it to some extent. A simple way to find the natural jaw position or 'centric' is to put the tip of your tongue in after part of your soft palate and slowly close until two teeth touch. Repeat this exercise and see if the same teeth touch again. The tendency is to let your tongue slip forward; this is the 'program' kicking-in trying to keep you from going into centric or to say it another way, to keep you in your programmed acquired or chewing-bite. Keep doing the exercise and you will discover that you have 'two bites.' When you are awake, you have a 'programmed bite,' which we call the acquired bite, but when you sleep, you slip into
your natural or true bite; the non-programmed bite. We dentists call it Centric or the
natural jaw position.”

Please don’t confuse ‘retruded jaw position’ with the old term ‘the most retruded position
of the condyles,’ which was an incorrect definition of centric, but I often use the term re-
truded to help my patient understand the difference of a protruded position of a condyle
(as in an acquired bite) and a retruded position of a condyle (as in a centric position),
which you will find helpful as I move along. Arguing about the definition of centric is an
old game that circuit lectures love to play to show their intelligence. (In my opinion,
show their ignorance.)

It seems to be a game with circuit lectures defining their idea of centric. The more impor-
tant definitions seem to come from the more popular lecturers. Most of the definitions
came from trying to explain centric when trying to find centric by using the hand or put-
ting tongue in the roof of the mouth. A way to cover-up ones lack of knowledge in joint
physiology or joint function, so it is better not to be caught up with anybody’s definition.
The condyles know where centric is when the jaw is balanced. A balanced bite splint or a
proper anterior deprogrammer can simulate a balanced jaw, for a while, but equilibrating
the teeth makes it permanent. The condyle will find the proper ‘centric’ with proper
treatment every time.

Now that you understand my idea of centric, let me get back to the problems of SC. SC
always causes problems (signs and symptoms), which may be sub clinical or serious; the
list is long. ‘Loosening of teeth’ is the first sign that occurs; that is, the teeth being
clenched on become loose. The looseness remains as long as SC trauma persist. This is
easily detected with ‘tooth tapping’ explained early on.

As one continues to clench, a joint may develop pain making one believe he or she has an
earache. This is because of the nearness of the ear chamber to the joint. Inflammation in a
joint is easily detected. Anyone can be taught to differentiate between earaches and joint
pain when using the ‘joint pressure test.’

SC can often ‘overwork’ muscles to the point that they develop micro spasms (sort of
micro-charley-horses). These spasms can simulate a headache, a jaw ache, an earache, or
a neck ache. I use the term ‘simulate’ because the world of medicine has not realized that
the SC syndrome even exists. I believe SC causes most headaches. In addition, to show
how far behind the public is in understanding the cause of headaches, just review the lit-
erature regarding headaches. A headache by way of SC is not even mentioned. Muscle
spasms can simulate sinus headaches and migraines as well. I have already explained the
methods of detecting sore muscles.

Can one grow out of TMJ? TMJ problems (e.g., headaches, earaches and so forth) often
seem to get better as we get older. However, this does not mean that one no longer
clenches. After years of moderately heavy SC, the teeth being traumatized can become extremely loose. These ‘spongy’ teeth no longer have the strength to put significant pressure to the joints or cause muscle soreness. This will often eliminate the signs and symptoms of TMJ making one to believe that he or she no longer has SC problems; however, the spongy teeth have ‘new’ problems.

Like a fence post, if a tooth is pushed one way or the other, the hole (socket) will enlarge on the side SC is pushing it (the compression side). This can prepare the periodontium for destructive periodontal disease. *(Socket will also get deeper from constant vertical compression.)*

The periodontal membrane has the capacity through the reticuloendothelial system (RES) to produce osteoclasts to absorb bone, when it is under continuous heavy pressure, which will enlarge tooth sockets. This is the body’s way to protect the joints and muscle. However, on the dark side, the enlarged sockets allow bony pockets to develop. *(I believe that if we did not have this built-in safeguard, there would be a lot more people committing suicide because of TMJ pain.)* A careful observer can examine pockets (and gum recession) to determine SC patterns and SC intensity. I will explain how I learned to treat periodontal disease the ‘right’ way later on.

On the other hand, I have examined many seniors that do not show any current signs or symptoms of SC. *(Although they may show old signs of trauma.)* Therefore, if the teeth and company can survive periodontal disease, it could be that seniors don’t clench as much.

**What cause the SC syndrome?** I know I have mentioned this before, but please bear with me. The psychosomatic problems caused by SC are clearly observable, but the cause of SC is not so clear. Dentistry is going to have a close relationship with anthropology and depth psychology in its future. As we look for the cause of the SC syndrome, we will uncover a wealth of information in cultural anthropology, and at the same time, making dentistry more exciting.

SC is caused by or exacerbated by a number of things. Stress is at the top of the list. Eliminating obvious stress can decrease SC trauma, but not to often. Changing ones bite (by any method) can precipitate SC trauma, while balancing ones jaw decreases SC trauma *(which is provable).* An unbalanced jaw may or may not cause SC, but it is for sure the ‘playing court’ for SC problems.

When a patient does a lot of SC, you have a patient that is chronically stressed. The stress may be caused by conscious problems but more likely caused by subconscious problems. A new stressful situation may produce an episode of heavy SC; on the other hand, a patient can get an episode of heavy SC when there is no obvious stress, which means to me that an unconscious problem has developed. For example, I have seen patients do little SC when over loaded with what seems to be severe stress and no increase in SC when the
patient develops new stress. This makes me believe that the major cause is unconscious stress. We clench when dreaming. We dream during REM sleep. I believe that dreams are an important part of our physi; maybe dreams are trying to inform us of things we need to change in our thinking and behavior.

Environmental problems often can exacerbate daytime clenching. Unbelievably, eliminating interdental inflammation can reduce SC. For example, I had a great deal of success reducing SC (but not stopping) by getting patients to elimination inflammation between teeth using the mopfloss method (which I will explain later). Maybe the inflammatory pressure between teeth caused the teeth to shift causing an uncomfortable feeling. Sound a little weird? Try it and see if you get the same results.

**Jaw Function.** There is much difference in how balanced and unbalanced jaws work. It becomes obvious when we compare the jaw movements during chewing and jaw movements during SC.

During SC, an unbalanced bite declares war: It’s teeth and company against joint apparatus with the muscles of mastication acting as instigator.

On the other hand, when chewing, an unbalanced bite works as if it were balanced because of magical muscle programming. We need to understand the difference in jaw movements during SC and chewing to make treatment of TMJ a lot clearer. On the other hand, believing that SC on an unbalanced jaw has nothing to do with dental problems and joint problems is like believing the world is flat.

SC trauma is unbelievable: 1. Teeth, get moved around, get fractured, lose fillings, get pulpitis causing hypersensitive teeth, get periapical abscesses, get gum recession (that often leads to abrasion), get bony pockets and root canals fester, 2. We get headaches, earaches, we can lose hearing, get dizzy, and experience tinnitus and discs get disfigured and injured (sometimes to an unrepairable degree), 3. Condyles are reshaped, twisted, and lose cortical plate, 4. The ramus can get bent backward and laterally causing the mandible to become wider. I can tell you that SC trauma causes all this, but it will go in one ear and out the other, until you begin to appreciate seriousness of SC trauma.

In a balanced jaw, the condyles are in a centric position and the posterior teeth touch at the same time. When the jaw crosses over to one side or the other, none of the back teeth make contact. That is, the cuspids disengage the back teeth to keep the joints working properly (called anterior guidance).

In acquired bites, one condyle is always positioned forward (down the condylar incline). Since it more forward, the teeth on that side are taller when in 'centric.' In an acquired bite the teeth fit just fine; there are no apparent prematurities. Yet, when we go into centric, we can feel the taller teeth (prematurities), which is what we do when we clench
when sleeping. That is, the forward condyle goes into a centric position. The condyle that was forward has to go up and back, which closes the space between upper and lower teeth. This makes the teeth too tall on that side. We can clench on those too-tall teeth causing muscle spasms and joint problems on the side opposite the tall teeth.

What I have said above is true when only one condyle rests down the condylar incline when closed in the acquired bite; but occasionally, both condyles are resting down the condylar incline (away from centric) in their acquired bite. Therefore, when their mandible goes into centric we will find balancing PG. The side that has the condyle closest to centric will be the favorite chewing side.

On an articulator, when we put models in an acquired bite (if the models are mounted in centric) the 'balls' of the articulator will show us the position of the condyles. It will show us how far the condyles are from centric. It will show us that one or both condyle are out of centric. Most often, only one condyle will be down the condylar incline.

Comparing the acquired bite to the centric bite will help us understand the problems pre-maturities cause during SC. As I have suggested, most of us have a favorite chewing side, which I have dubbed the 'primary side' and a non-favorite chewing side that I call the 'secondary side.' Don’t panic, as you will see, these new terms are necessary to explain jaw function.

The primary side functions better, since it is essentially a balanced-bite. Its condylar head is in a centric position or at least close to it. For those of you that want to argue at this point, I urge you to hold on for a while. Yes, there are exceptions, but what I have said occurs ‘most’ of the time. I’m trying to keep things simple.

The jaw is not balanced on the secondary side because its condyle is positioned forward down the fossa slope. Since the condyle is forward on its socket-incline, the space between the upper and lower teeth is larger. Consequently, when both condyles are in a centric position, the secondary side’s back teeth are taller. This is what happens when we clench during sleep. This causes teeth to interfere with jaw function (posterior guidance). We would have to squeeze harder on the primary side to make its teeth contact and the condyle to seat.

This causes muscle soreness on the primary side; in other words, when one side of our face has pain, the other side has taller teeth in centric. Fortunately, muscle programming keeps chewing comfortable; that is, to keep the too-tall-teeth from hitting when eating.

Consider the jaw movement on a patient that has a perfect bite, who chews in Centric. She has no offending inclines in any movement, and has ideal anterior guidance. Of course, she does not have a primary side or secondary side. Both sides are balanced. When she begins to chew, the working side’s condyle is firmly positioned in its socket,
rotating ever so precisely, while the perfect working bite is crushing and tearing food.
There is no interference from the balancing side. The balancing condyle is resting firmly
on its socket’s incline as it moves back and forth (translating). The jaw is supported on
the balancing side at the joint, at the working side at the joint and with the bolus of food
or tooth contact on the working side. When she chews on the other side, it works the
same. When she puts her teeth together, she is in Centric. She has a balanced jaw. She has
two balanced sides.

OK, so how does chewing differ in an unbalanced jaw? Because of the body’s magical
muscle programming, an unbalanced jaw works just as good as a balanced jaw or almost
as good. Even though a condyle (in an unbalanced jaw) is out of place because of the way
teeth fit on the secondary side, the chewing muscles know exactly what to do to allow
trouble-free chewing. The programmed muscles move the jaw into the best positions to
make chewing comfortable. Therefore, if we did not sleepclench, unbalanced jaws would
not be a problem. Any OLE chewing bite gets five stars.

However, most of us do clench while sleeping, which means that any OLE chewing bite
gets no stars at all. When we squeeze our teeth together in our sleep, the magical muscle
programming is sleeping too. Muscle programming only works when we are awake.
When sleeping, we have no choice but to squeeze on the prematurities. Most people only
have good jaw function when they chew (except those of us who have had our jaws bal-
anced through equilibration).

Many dentists know how to put the mandible in centric without having to put the tip of
the tongue in the palate. However, it is a good idea to teach patients how to go into cen-
tric (using this method) for reasons you already know. Your staff can do the teaching.
When they can find centric, it helps us eliminate prematurities we created in our restora-
tions and make denture more comfortable. When a patient can go into centric and hold it
(even if they have to hold the tip of the tongue in place), they can really help you find
prematurities by sliding the teeth one way and then the other (posterior guidance). When
they come back for a check, I can assure you they will have found prematurities if they
exist. This can save much time.

**The Tanner method of equilibration** makes finding posterior guidance easy, the dentist
does not have to teach the tongue trick or try to use the antiquated method guiding the
jaw with his hand. All posterior guidance must be eliminated to stop TMJ problems and
heal joints. Trying to equilibrate a balanced appliance or balancing teeth with these meth-
ods won’t work. However, these tricks are useful for teaching patients about the jaw func-
tion. (Only the Tanner method offers good results, which evolves the patient sliding
around every which way on a double thickness of red silk ribbon. They inadvertently
mark the posterior prematurities)
**Front teeth should always guide one’s jaw.** The objective of a balanced bite appliance or equilibrating teeth is to eliminate posterior guidance by putting the jaws guidance in the right place at the right angle. This restores proper function, which is the only thing that stops SC problems and restores health. An appliance or adjusting teeth that does not do this, will not remove the pain or other problems caused by SC.

**Crossover** in centric is very different from cross over in the acquired bite. Understanding this point is very important. Repeating myself many times will, I hope, register this important point. As mentioned before, muscle programming keeps us from crossing over in centric when awake, but muscle programming is lost during sleep. Therefore, when we cross over during sleep we do it in centric, which gives us plenty of posterior guidance play with.

Some foolish dentists believe that posterior and anterior teeth can be coordinated in crossover, but I believe that this type of coordination is far beyond even a highly skilled occlusal therapist. I believe I could do it in a few patients, but it would require much too long to do so making it a very expensive procedure. At any rate, it is a waste of time and would require extensive recalls to keep things coordinated. In addition, the odds are, you will not stop the pain. *One more time, let me say:* When one crosses over in his acquired bite, the cuspids, bicuspids, and molars seem to be coordinated; however that all changes when we cross over in centric or when we sleep.

Maybe a better name for anterior guidance would be ‘crossover guidance.’ When the jaw crosses over from one side to the other, the front teeth, usually the cuspids, guide a properly functioning jaw, which accounts for the name anterior guidance. Therefore, when back teeth guide the jaw, the bite is not balanced with the joint.

**Posterior guidance (PG)** can occur on the working-side and/or on the balancing-side. Natural occurring balancing-PG is not as common as iatrogenic balancing-PG; that is, the ones we dentists create. Iatrogenic PG (balancing or working side) can occur when we cap teeth or do orthodontic procedures. Iatrogenic balancing PG can cause severe pain.

For example, following the placement of a cap on a second molar that creates a balancing-PG can quickly cause (1) severe facial pain mimicking a migraine or trigeminal neuralgia (tic dou-lou-reux) or (2) teeth to develop periodontal disease. I had a patient that was getting ready to have surgery to cut part of the trigeminal nerve. One of my patients asked her to see me. History taking revealed she started having a problem after she had a crown placed on the lower right second molar. The tic pain (on the left side) began to spasmodically occur over the next couple of years. No one had diagnosed this.

I eliminated the balancing PG and the ‘tic’ pain went away, almost immediately. I was naturally her hero. What makes this case special was what happened later. I had to muti-
late the cap so; I capped her tooth with a composite crown. Two years later she came back with the same type of pain. Her dentist had replaced the temporary cap with a new iatrogenic balancing-PG crown. Again, I eliminated the problem and her pain went away. Many dentists that are familiar with the balanced-jaw idea have had similar experiences.

So putting crossover guidance in the right place and right angle is necessary. Some bites won’t allow guidance on the cuspids and must be placed on the first bicuspids or even the second bicuspids to have comfortable crossover guidance. This is a reason why ‘crossover guidance’ is a better name than anterior guidance. I have made many open-bite patients comfortable by putting guidance in the cuspids/bicuspid area.

As people continue SC, the secondary side’s condyle tends to progressively position itself a little further down the socket incline. Again, the teeth get a little taller, which makes things worse. As a condyle positions itself further down the socket’s incline, the space between the arches increases and teeth get taller when the condyle seats in its centric position.

I don’t want to irritate you with all my repetition, but this is the area that is so often overlooked. This is the primary cause of equilibration failure (either a splint or adjusting teeth). Failure to eliminate ‘all’ posterior guidance on the secondary side will do patients little good. Posterior guidance is a killer. It’s the main cause of SC problems. When we clench on posterior guidance, we damage teeth, gums, muscle, and joints. I call posterior interferences ‘posterior guidance,’ so PG is my term. Nevertheless, since jaw guidance is the main problem in TMJ, it makes sense to me to use my term. The secret to balancing a jaw is putting the guidance of the jaw in the right place and at the right angle, and of course, balancing posterior teeth to touch at the same time.

Although correct crossover guidance is necessary it is more complicated than I have suggested, but what I have said is about as simple as I am capable of explaining jaw guidance. (Hold on a minute, you say, “What about the anterior deprogrammers”; they keep folks from having PG. However, without posterior contact for a long time, equilibration is more difficult because the posterior teeth overerupt, which increases PG; not to mention compression of anterior teeth (open-bite), which decreases anterior guidance). Therefore, long-term use of anterior appliances is not a good idea.

All occlusomuscular problems depend on what a person does with his or her teeth when SC. However, this point is law: When the teeth on one side hit first (when SC), pain will develop on the other side.

Deprogrammers, which try to break one’s SC patterns, do not balance one’s jaw. They are strictly temporary. They should never be used every night. They do not stop SC or ‘cush-ion’ SC.
The Disc. Three things control disc movements: 1. The pressure of the moving condyle has the most influence. 2. The small muscle attached at the foot of the disc controls the backward movement of the disc; that is, it keeps the disc from moving back too fast. Lastly, there are elastic fibers attached to the backside of the disc that continually try to keep the disc in a centric position.

Disc control is dependent on all three. For example, when a condyle moves forward, it moves the disc forward, and when it moves back, it moves the disc back. However, because of the complex shape of the condyle, it would cause the discs to move back too fast, which can disfigure the front part of the disc. That is, the front part of the disc would be trapped under the pressure of the condyle. The discs need precise control, which is furnished in part by the superior belly of the lateral pterygoid (a small muscle to the foot of discs).

I call this scenario ‘Triplex.’ I call it Triplex since we don’t have a suitable descriptive term in dentistry. Normally, the disc moves with the condyle, even when we open our mouth wide when discs move backward to accommodate the complex shape of the condylar head.

When we are awake, muscle programming assures Triplex by its magical jaw coordination. Triplex is maintained even when sleeping with a ‘balanced bite,’ but triplex is not maintained with an unbalanced bite.

A TM Joint disc is a marvelous part of our body. The joints move more than 2,000 times a day. We are fortunate that we have the signs and symptoms of TMJ (or tooth problems), to warn us that we are damaging our discs through SC.

A TM joint disc is not a meniscus. That is what the disc is called in the knee. However, I am not going to try to describe the anatomy or go into the function of the TM Joints without graphics. Therefore, I will leave that to a iPod movie with Parker Mahan on Jaw Function and Joint Anatomy.

The Q-Tip exam I mentioned earlier is a wonderful way to depict spastic muscles, but it is also a great way to learn how squeezing on different teeth can teach us the effects of unbalanced SC trauma. As I have said, problems begin when we clench in a centric position when sleeping where some of the teeth are too-tall. When we close on the too-tall teeth on the secondary side, the primary side’s condyle won’t seat. We have to squeeze hard to make it seat, which we do unconsciously. This causes muscles to get sore on the primary side, which is the cause of facial pain, headaches et cetera. You might want to review the Q-tips part to help you understand this idea.
An iPod movie “TMJ Movie” has a video of Dr. Michael Kadair explaining to a group of dentists how an unbalanced jaw causes pain. Check my web site.
www.sleepclenching.com for availability.

Joint problems develop for the same reason. When the too-tall teeth prevent the primary sides condyle from seating, the disc can be jerked around and damaged when—Triplex is compromised. The disc can be jerked around by the contraction and relaxation of the little muscle in front of the disc and the pull of elastic tissue behind the disc because muscle activity begins before the needed condylar pressure is applied. That is, there is a time when squeezing begins and the condyle is seated. These ’moments in time’ multiplied thousand of times over months of SC can damage a disc. The disc is out of control without Triplex; and, when the condyle does seat (from extra squeezing) the disc can be in the wrong place causing pressure in an undesirable place. When this occurs night after night, year after year, irritation and damage can occur.

This is an over simplification, but close enough to give you an idea of what can happen. The too-tall teeth are the cause of PG, the thing we do not want. Posterior guidance is my term for working and balancing interferences. Patients understand occlusal dysfunction and the balanced jaw idea a little easier when I talk of ‘jaw guidance.’

Anterior guidance, crossover guidance, posterior working guidance, posterior balancing guidance, cuspid guidance, bicuspid guidance and condylar guidance can create much confusion, but when I explain ‘which’ teeth guide their jaw, patients seem to understand. When we obtain proper jaw guidance, dysfunctional guidances and prematurities no longer exist.

Showing a patient a “too-tall-tooth” by putting him in centric with your hand is OK to demonstrate that he has a centric and acquire bite, but using this method (exclusively) to balance an appliance or one's occlusion will fail to balance one’s jaw.

Tanner teaches his patients how teeth meet and how the muscles contract differently when squeezing the teeth together in unbalanced bites. They begin to understand the idea of a balanced or unbalanced jaw. This is imperative to help patients. His methods are clearly illustrated in the iPod movie “TMJ Movie” already mentioned.

SC Patterns: All jaw movements are in a centric relationship during SC; that is; we are squeezing on our unbalance bite. We do not have the luxury of muscle programming during SC leaving our bite to ‘unconscious uncontrolled’ muscle activity. Muscles close the jaw in a natural centric position without help from muscle programming exposing PG (the too-tall-teeth) we don’t know we have. We are helpless to do anything about it. It is like some other being is using our jaw.
It is a different world from using our teeth when awake. I mentioned above that SC is like someone else is using our jaw and in a way that may be the case. There is no doubt that we have a conscious and an unconscious mind. Our unconscious mind is unconscious, that is, we don’t know much about it or what is going on. We do know we dream and that’s when we clench. Common sense tells us that SC is being used by the unconscious mind for reasons we may not understand. It also makes sense to me that if SC and dreaming are connected, there must be a signal from that world since we can often remember what happened in our dreams.

Is the SC-dreaming scenario a screw-up of nature or is it a neat communication system that nature has provided; that is, a way of communicating with the unconscious. Carl Jung once said that when a patient eliminated their unconscious problems they dreamed less’ and I believe they clench less.

Regardless, as you become involved in the SC syndrome you will naturally become involved in the unconscious mind’s effect on SC. I believe that SC is a synchronistic signal to pay attention to dreams and look for meaning; it could be something very important to us. It is something we need to consider. In the future, we will learn more about this and will be able to help stop SC in some patients.

Most SC is in a centric position, but we can clench in other positions too. For example, we will find teeth that don’t feel right, such as over contoured crowns, and most of us go into a ‘rest position’ (for the lack of another name), where we put our front teeth end to end. I suppose that we get tired of SC on back teeth and need to rest for a while. When we do this year and year, we wear the biting surfaces until they match like puzzle pieces. This by itself confirms SC. As you move around on the front teeth, most of you will find a place that they will match perfectly, (unless your front teeth have been restored).

The rest position usually occurs to the right or left of center. If we do enough “resting” in this position, we can develop neck and shoulder pain on the opposite side. Sometimes, we create enough leverage (the fence post idea) to cause gingival recession since most of us brush good enough to keep inflammation in check. However, a few patients with lousy brushing habits develop bony pockets instead.

You can have a patient close on one of these ‘match-ups’ for a short time and they will notice soreness in the opposite neck area.

How many times have you seen a single loose molar with a bony pocket all the way to its roots’ end? The only solution is to extract. If you have not adopted the SC trauma theory, you have to blame the periodontal breakdown on bugs but you would have to ask yourself the question “why did the bugs pick only on this tooth”? Of course that is ridiculous; it is simply the body getting a tooth out of the way that is causing joint and muscle problems thru SC. It’s a defense mechanism. It you caught it in time you can unload the SC
trauma and keep the tooth. Before I understood SC trauma, I would have done periodontal surgery. I hate to admit how many times I did that, but today I would consider it malpractice; that is, not eliminating the cause first. Until I get around to talking about equilibration, which is an attempt to balance the jaw, don’t overlook ‘unloading SC trauma’ on a tooth or two; you can only help.

Changing a resting match-up by capping front teeth can lead to periodontal problems, as well as temporal muscle and joint problems. **Review the Q-tip.**

Para-functional SC (an abnormal jaw movement) would be hooking a lower cuspid over the facial surface of the upper cuspid. This type of SC is rare, but it can cause some unusual damage to teeth such as a lingual bony pocket on an upper cuspid. For example a dentist challenged me on my theories about SC. He asked me how a lingual pocket on an upper cuspid had occurred on his patient. When I examined his patient it was easy to see how the patient had a **rest position** by hooking his lower cuspid over the upper cuspid.

**Crossover** is a term that indicates crossing over from one side to the other. We do this when we eat. We move from one side to the other to make chewing comfortable. Most of us make contact between the upper and lower front teeth when we cross over with the teeth together, which supports the jaw. However, some people, in rare cases, do not have anterior support in crossover when SC during sleep. That is, back teeth prevent closure of anterior teeth in crossover. When people clench in this situation, they can cause tremendous neck muscle soreness. This is the primary cause of spastic torticollis (ST).

When in centric, some people can have anterior crossover support on one side, but not the other, and some don’t have crossover support either way. Nevertheless, the result of SC on unsupported centric crossover is the same.

This is different from an anterior open-bite, which does not have crossover contact on anterior teeth but jaw guidance in their acquire bite is usually in the cuspid area or there about. An open bite can occur with overuse of an anterior deprogrammer.

When we as dentists understand SC patterns, and how SC pressure and intensity can increase in episodes, we will know what treatment is best, that is, whether temporary non-invasive therapy will help or to get busy balancing the patient’s jaw. Further, if we understand the weird para-functional SC that can occur, we will uncover the cause of problems that baffle our colleagues.

**Spastic Torticollis (ST)** also called torticollis, dystonia and cervical torticollis is a painful muscular problem. The neck muscles on one side become spastic, which causes the head to lean. Using a botulism extract is the normal treatment. This will reduce pain, but not the inflammation, so it does not help the posture. These people desperately need help.
There is nothing in the literature that supports SC as a cause, but there is no doubt in my mind that it is the primary cause.

Spastic torticollis is not a bad place to start to learn about the SC syndrome even though it is probably the most serious. It demonstrates how SC trauma can cause serious problems. While ST is the worse muscle problem that SC trauma can cause, it clearly shows how an unbalanced jaw causes problems. These people have an unbalanced jaw in the extreme. Muscles problems are just a few of the problems SC causes, but it’s a good place to start to learn how SC on an unbalanced jaw can cause occlusomuscular problems.

I had a friend with ST. It was getting worst with time. Medication was not helping much. I asked her and her husband if I could balance her jaw. I told them that it might not help, but in any case, balancing the jaw always made jaw function better.

Equilibration solved her problem.

**Spastic torticollis** (ST) is a painful dysfunctional problem. The neck muscles on one side become spastic, causing the head to lean. Using very strong anti-inflammatory medications is the normal treatment. This will help but not much. These people desperately need help. There is nothing in the literature that supports clenching as a cause, but there is no doubt in my mind as to the cause and effect of ST. It is certainly a TMJ problem.

ST is a good place to start in the clenching syndrome. It demonstrates how clenching trauma can cause serious problems. ST is the worse muscle problem that clenching trauma can cause, but it clearly shows how an unbalanced jaw causes problems. These people have an unbalance jaw in the extreme. Muscles problems are just a few of the problems clenching causes. However, it is a good place to start to learn how clenching on an unbalanced jaw can cause TMJ problems.

I had a friend that ST. It was getting worst with time. Medication was not helping much. I asked her and her husband if I balance her jaw. I told them that it might help, but in any case, balancing the jaw always made jaw function better.

*As you can see, Susan is unable to hold her head erect, when she tried to straighten it, there was excruciating pain.*

When I examined her, I found that she had no crossover anterior contact. In nonprofessionals' language, this means that when she moved her jaw to the left or right, only back teeth make contact. The front teeth did not touch. This a classic bite for torticollis patients. Front teeth need to
support the jaw in all movements. Without this support she could squeeze on back teeth with tremendous leverage. However, more important, in a centric position her right third molar was making first contact. This is a bad situation when someone clenches in that position with no anterior support. This type of leverage can cause neck muscles to become sore and even spastic.

You can see that there is no contact on the front teeth when she crosses over to the right. (Upper photo) and you can also see that she has no crossover support when she moved to the left. (Lower photo)

This is an extreme out-of-balanced jaw. There would be many spastic neck muscles if many people had this much crossover problem.

Keep in mind that a person has to clench on those back teeth to create muscle problems. The more one clenches the more severe the muscle problems will be. However, neck soreness is probably present in some degree in bites like this.

**I needed to eliminate PG (i.e balance the posteriors) and give her crossover support.** The front teeth needed lots of buildup to guard against jaw leverage from those high right third molars. I made her a simple, but balanced, anterior bite splint. The anterior bite splint was made on the lower front teeth because I could make it smaller and less obtrusive.

In the upper left photo, one can see that the splint gave her **crossover support** on the left side. In the center photo she had support when her jaw was centered. In the right photo she had **crossover support** on the right side. In lay terms, Susan could not touch the right third molars that kept her from touching front teeth when she moved her jaw left or right, when using the splint. The splint was a temporary solution, but it began to reduce the neck pain.

**After a few weeks I started equilibration.** The objective of equilibration was to balance her jaw so that there would not need of the bite splint. That is, she would have crossover support on her front teeth wherever she moved her jaw and of course have a balanced bite.
The upper left photo shows that she has **left crossover support**. The center photo shows that she was balanced in **Centric**. The right photo shows she has **right crossover support**. Compare this

This is Susan four years after therapy. The muscle pain is gone. More important, she can hold her head straight. No one asks her what is wrong anymore. It has been 10 years since treatment. She can still hold her head straight without pain. She is a happy person and thinks I am the greatest. Nobody ask why her head is leaning

Any unbalance bite, when clenched on, can cause problems. What happens to people from clenching depends on the type of unbalanced bite they have, and what they do with that bite when they sleep. The objective of therapy, for all clenching problems, is to balance the jaw with a balanced bite. In this case, I eliminated the serious bite problem with a simple splint, then balanced her jaw with equilibration.

You have heard me and will hear me again talk about **overuse** of anterior deprogrammers (AD), but that is not the case in torticollis cases. I do not believe that anterior deprogrammers used in this type of bite will cause a problem regardless how long they use them. This is an exception the rule “*never use an AD very long*”. These patients do not clench heavy on the bite splint since it is a rest position for them. Tanner appliances won’t work in this type of bite.

Here is an example of early spastic torticollis: “*Hi Doc, Yours is the only site that mentions what seems to be my problem. I know that I clench my teeth, I get frequent headaches from it, and I can see the damage. I also have receding gums and I have tooth damage from that. (Mainly the gums on the left side of my mouth.) However, most troubling is I seem to have developed this feeling of pressure /tightness on the right side of my head. It is especially pronounced in lower portion behind my ear, and it affects other areas like my right temple. It makes my whole face feel off kilter. I went to the hairdresser and she noticed that I kept tilting my head to the right because of this problem, and she couldn't make me straighten it out. It's not noticeable to most*”
people but it really bothers me. Is it spastic torticollis? I would be so grateful for your help; I think everyone thinks I'm crazy.”

This is a typical case of early ST. This person has similar signs and symptoms of the cases I have treated. ST belongs in the SC Syndrome and that we can successfully treat it through the method mentioned above.

This above is an example of early torticollis. Notice that the 13 year old has a right shoulder draping downward and the left shoulder is higher. The head is not leaning to the left but the neck space is much smaller on the left side. The left sternocleidomastoid muscle (SCM) was tender and slightly enlarged. These cases are common but rarely noticed in the early stage. They are very easy to treat.

Wouldn’t it be wonderful for ‘us dentists’ to stop the progress by learning how to treat SC trauma problems.

**Anterior Crossover Guidance:** We should examine anterior guidance a little closer so you can better understand what deprogrammers cannot do, and how they can be a problem. Anterior guidance is necessary to keep the jaw and teeth functioning effectively. Acquired-bites appear to have proper anterior (cuspid) guidance but they don’t. A balanced jaw has comfortable anterior guidance awake or asleep. The cuspids should separate the back teeth before they can interfere with proper function.

OK: Say for example, a guy decides to have a crown placed on the upper left cuspid because he thought it ugly. New crowns nearly always increase the guidance angle. This usually happens because laboratories often create too much bulk when building crowns, that is, the crowns are usually over contoured. This is especially true with upper front crowns. When the patient starts SC on the new crown, one or more things will happen. He may move the cuspid by pushing it further out to the point where it feels okay again so TMJ problems might have been avoided although the tooth will probably become sensitive.

On the other hand, he may have caused gum recession; or worst, a pupal abscessed, which will need a root canal. Similar things could happen to the lower tooth that opposes the crowned cuspid.
If the above doesn’t happen, TMJ problems can occur. If the upper left crowned cuspid refuses to move, the opposite joint will develop problems. Maybe at first the joint will begin to click or pop a little or maybe it will begin to cause an earache-like pain; and worst, he could develop serious TMJ. The type and severity of the problem depends on how he clenches and how often. It also depends on the strength of the cuspid and on the preexisting health of the opposite joint.

This can happen with any anterior crown that is over contoured. It can also cause some constant problems that he won’t be aware of. If problems begin to occur in the right joint because of the over contoured cap, he could develop a slight jog to the left. I have already mentioned that any dental procedure that changes a patient’s bite can cause occlusomuscular problems. Therefore, when we increase anterior guidance, as I described above, one can develop problems.

Here is an example of over contoured anterior caps. This patient had an unbalanced bite, but did not have a TMJ problem. Four upper caps were constructed, and as usual, the Lab over-contoured the inside of the caps. She began to develop headaches. Squeezing on a cotton swab precipitated her pain. The problem with this case was that I did not want to grind down the inside of the caps because I would have surely mutilated them. We often don’t create enough space for the lab to get a proper contour. If I mutilated her caps she and her dentist would have been all over me. If I told her that the new caps need to be replaced her dentist would no longer be my friend. Therefore, I made a Tanner appliance and asked her to wear it every other day. That solved her headaches problem, and eventually the TMJ problems went away so I had her stop using the appliance. I guess she just got use to the new bite. Nevertheless, (more likely) she repositioned her teeth by SC.

Problems are often caused by the dentist taking a centric bite to mount models for crown construction. You say, “Isn’t that what you are supposed to do?” Well, yes, but only when the bite is balanced. It would be better to mount the case in the acquired bite. Some dental instructors would cry heresy for such a statement, but why would anyone want to create a crown or bridge in centric if the patient’s bite had not been equilibrated beforehand? Of course you can always equilibrate after any procedure.

Lets create another scenario for the over contoured posterior crown. If the patient was having TMJ problems on the one side, the patient could develop TMJ on both sides with over contoured restorations. I suspect this is why many patients have two-sided TMJ. The side that has the shorter teeth is side that that becomes painful, so it you create a crown or bridge on that side that it higher than the other; guess what? The non-painful side can become painful. You have change the bite enough to severely change the patients SC patterns.

Anterior guidance, cuspid guidance, and incisal guidance really mean the same thing, because in any movement the jaw makes (forward and sideways) it is or should be anteriors
that disengage posterior teeth. If they don’t do this, the back teeth are guiding the jaw. Muscles won’t tolerate this!

All the above is what I call creating iatrogenic problems; it is very easy to do and unfortunately there is much it being done. Keep in mind that traumatic SC for the above to occur.

**Condylar guidance verse anterior guidance:** I want to make one very important point about the relationship between the condylar guidance angle and the anterior guidance angle. They should be close to the same angle in a balanced bite. If the condylar guidance is 25 degrees, then the opposite side’s anterior guidance should be about 25 degrees. Bad things can happen when they are not the same angles, like the over contoured cuspid crown mentioned above. If the condylar guidance has a steep angle, the opposite anterior guidance can be the same, but not more! The bad joint, that is, the primary side’s joint, usually has steeper condylar guidance than the secondary side. We cannot change condylar guidance, so we have to synchronize anterior guidance with the joint’s guidance. The thing that fooled me, before I understood SC trauma, was that I was looking at acquired crossover guidance. I did not realize that it was the posterior teeth guiding the jaw, not the cuspids, when the patient was in centric; there is a huge difference.

If we make the anterior guidance is too shallow, it will create posterior guidance, which we don’t want. If the anterior guidance is too steep, the opposite sides condyle won’t seat properly, disrupting triplex, especially during SC. It can create a ‘click’ in the joint. If the anterior guidance on a bite appliance is too steep, the patient may dig into the steep side causing new TMJ problems, like the over-contoured crown mentioned above.

Dr. Michael Kadair was demonstrating a Tanner appliance to dentists at the Panky institute, when a dentist asked if opening the bite had stopped the clicking in a joint. He said, "We can put it back if you like,” which he did. He added some plastic to increase the anterior guidance and the click came back.

A few people have bites so bad that they don’t even look human, yet they do not develop TMJ problems or periodontal disease. A patient like this comes to mind. She was about 75 years young. She wanted me to balance her bite because one of her friends was pleased with what I had done for her. She showed no current signs of SC trauma. None of the teeth were loose. She had facet wear areas, but this was created years before. She had no signs of periodontal problems. I politely refused to balance her jaw. I did not want to fix something that wasn’t broken. Patients with bite like hers can cause some of us to believe that the bite has nothing to do with TMJ or periodontal problems. **However, it is not a bad bite that causes problems, it is SC on a bad bite that cause TMJ problems.**

**Protrusive verses translating guidance:** Condylar guidance is the angle of guidance that is created when the condyle slides down its socket’s slope. When we protrude our
jaw (to bite something), both condyles move down the socket slope. When we cross over to one side, only one condyle moves forward (translates), the other stays in place (rotates) as we say in our dental terms.

As a rule, the condylar angle is the same on both sides when we bite on our front teeth, but the condylar guidance is not the same when translating, there’s usually a different guidance angle on each side. When you examine skulls you will often find the translating condyle, on one side opens the interdental space several millimeters, while the other side opens less. Obviously the side that opens more has a steeper translating guidance angle. This is not a problem when we eat because muscle programming causes us to move the jaw where it works best; it keeps us from bumping teeth that are in the way.

Most of us don’t realize that protrusive guidance and translating guidance are often different. If one examines the complex shapes of enough condyles, one will realize that there can be many guidance angles depending where the condyle slides down its socket. This may not be a major problem in reconstruction and splint design, but it can cause problems. We should try to match crossover and condylar guidance, and since the primary side will usually have a steeper translating guidance than protrusive guidance. One could inadvertently create a crossover guidance that is too shallow. This is why I took a translating bite (crossover bite) on each side instead of just a protrusive bite. I could adjust the articulator’s condylar translating guidance correctly.

Does this make a difference? Not really, because it is almost impossible create any appliance or reconstruction precisely accurate on an articulator (no matter how much it cost). The final balancing has to be done by way of equilibration.

Nevertheless, there is one thing that I would like to see on an articulator; if we could adjust the position of the articulator’s ‘joint,’ we could observe deviation. It would be a good teaching device; that is, when dental schools get around to teaching students about the SC syndrome.

As if I have not mentioned it enough, PG is a term that should replace the term ‘posterior interference.’ PG occurs when back teeth guide the jaw when sliding from side to side. The objective of balancing the jaw is to eliminate PG and replace it with proper anterior or crossover guidance. Most of us are accustom to the old methods of finding prematurities, but these methods do not reveal PG, which is the very thing that causes most TMJ. When you become indoctrinated in SC trauma, you will no doubt appreciate the term ‘posterior guidance.’

When I first started learning to equilibrate, I used the hand or tongue-in-the roof of the palate to position the jaw in centric to find posterior interferences, but those methods did not begin to locate the elusive PG. However, when I learned Tanner’s method of equilibration I could eliminate PG with ease.
The cuspids guide the jaw when it crosses over or moves forward in an ideal situation; however, patients that have lots of horizontal space between the upper and lower teeth front teeth or have an anterior open bite, may have to settle for anterior guidance a little further back than the cuspids, when equilibrated. Back teeth should touch in centric at the same time, but not in any other jaw position.

This is the basic idea of the Tanner method. Unlike equilibration, we can put anterior guidance anywhere we want when using the Tanner bite appliance; that is, the best place and best angle that will make a patient comfortable.

**Temporary bite splints:** First, I do not consider any full mouth bite splint a temporary bite splint; that is unless it is a balanced appliance. If it is not balanced then balance it. Treating TMJ with a full mouth soft night guard was a good stab years ago, but they have long out lived their place in occlusal therapy. If you have a patient on one of these get rid of it. They probable don’t even need it. If they have used it for years, their bite will reveal the unfortunate results.

The anterior guidance appliance (AGA), eliminates all posterior guidance, and at the same time, establishes good crossover guidance. It is essentially an upper Tanner without the posterior part. The AGA is made on the upper front teeth and prevents the posterior teeth from touching; that is, it prevents PG. Nevertheless, it is a temporary appliance and should not be used for extended periods. It is one of the many types of anterior deprogrammers. That said, a simple anterior deprogrammer (AD) will be just as good and does not take as much time to make. I made many AGAs because I enjoyed creating anterior guidance.

The BTR and NTI appliances (anterior deprogrammers) do the same thing except they don’t provide the quality of anterior guidance that the AGA does. They open the bite more than an AGA, but they are easier to make. I have used soft plastic anterior deprogrammers with some success but they are not as reliable as hard ones.

Be sure you tell your patients that if they use an anterior deprogrammer every night for a long time, it can create an anterior open bite, (which is obvious) and increase posterior guidance (which is not so obvious). They are great for temporary use, however. *They taught me that when wearing one for several nights posterior teeth became less loose.* They showed me the significance of SC trauma. Try it and see what happens.

They can stop headaches, earaches, and other facial pain in many cases. However, this only tells us that its SC on unbalanced posterior teeth That is causing the problem. They can be used for short periods, for example, but when the pain goes away stop using it. One can always use it again with another episode of excess SC trauma. Otherwise, it is an interim treatment to balancing the jaw.
There is no such thing as a bite appliance *stopping* SC, but they can reduce SC trauma, which reduces pain. I have heard many patients tell me that their mouth guard stopped their SC but they did not, and they were unaware of the problems it had created.

Even when using a Tanner bite appliance, which covers all the teeth, one has to make sure not to build in posterior guidance as the anterior guidance angle is changed. It is essential that upper cuspids and upper central guide all jaw movements (when possible). If the bite appliance does not eliminate all PG, it has only rearranged PG. That is, we have only created a different unbalanced bite. This is why most mouthpieces don’t work. They don’t eliminate posterior guidance; it is better to make anterior deprogrammers instead.

It takes much time, skill, and patience to properly adjust (balance) the Tanner bite appliance, but when one does so, the jaw is balanced. However, since it requires much skill and patience to balance a Tanner appliance, the AD or NTI appliance would be a better choice for many of us to do the most good for our patients. They are easy to make. If one spends few minutes refining the AD, most people will be reasonably comfortable. 

**All bite splints are temporary.** That is, they should never be used all the time, only when needed. Even the Tanner should only be used until equilibration is completed; balancing the jaw with a balanced bite appliance is an in-between-therapy leading to balancing the teeth themselves. The *anterior reposition appliance* was an old method of trying to capture a displaced disc, but I would not think of using one. They are not even close to normal function, which is needed to restore health, and in a heavy clencher it can cause some serious problems. The last appliance I want to mention is the ‘frog ear appliance’ that is taught at the Panky Institute. It opens the bite too much because it uses the cuspids as stops like the posterior teeth. I have never seen this in any kind of occlusion, especially an occlusion in centric. It was a spin-off of Dr. Tanner’s appliance, but we can screw up any thing if we try. Unbalanced soft or hard *night guards* should be avoided.

**Periodontal disease:** In the late stage of the SC syndrome (very loose teeth), Triplex is not disturbed. The spongy teeth (the too-tall teeth) don’t have enough resistance to strain muscles or prevent a condyle from seating. Triplex is maintained during SC. TMJ problems have decreased because the loose teeth reduce SC trauma to muscles and joints.

However, the spongy teeth usually develop advanced periodontal problems. As a periodontist, I saw this often. When I asked patients if they had ever been bothered with headaches they usually answered, “Yes, but not anymore.” In other words, they had passed from the *TMJ stage* of the SC syndrome to the *losing teeth stage*, that is, the advanced periodontal disease stage.

Balancing the jaw will restore a dysfunctional disc and stop pain during the TMJ stage, and tighten teeth in the loosened-teeth stage. In other words, Triplex is no longer com-
promised when we balance the jaw. SC trauma is no longer a problem when the jaw is balanced; the body can repair things because jaw function is restored.

With enough research, we will (someday) figure out how to control SC through a psychological approach. SC is an unconscious activity, which I believe is related to conflicts between the conscious and unconscious mind, so be careful about devices claiming that they control SC, they can’t. They are just another type of deprogrammer.

Temporary treatment does not address the basic problem, which is SC on an unbalanced jaw. Temporary treatment includes medicines, massage, myotherapy, relaxing sprays, deprogrammers, and so on. Bite splints, orthodontics, reconstruction, and equilibration that do not balance the jaw should be avoided.

Complete treatment (also called invasive treatment) includes preliminary treatment followed by equilibration with the objective to create a ‘balanced jaw.’ Do not confuse temporary treatment with complete occlusal therapy. Unfortunately some believe that temporary splints are complete treatment; however, a temporary splint is just another ‘pill.’

‘Noninvasive treatment’ and ‘invasive treatment’ are lousy terms invented by a circuit lecturer (who did not understand SC trauma) to kick his lecture up a notch. There is only temporary treatment and complete treatment for TMJ.

Some people get relief from anti-inflammatory medication. I have proven this to myself often. When I travel in Central America, and when working in a charity clinic, I always have dexamethasone and ibuprofen with me to help people who are having painful TMJ problems. This combination is very effective. If their TMJ pain is episodical, the medication will get them over the hump, so to speak. A heavy clencher with constant discomfort may or may not get relief.

When an episode of pain occurs from heavy SC, the pain may not subside if enough ‘normal’ SC pressure is maintained to keep the pain even though he is SC less. Using the anti-inflammatory medication will often reduce the joint inflammation enough so that the ‘normal’ SC won’t be a problem.

The following is an example of a large number of SC problems I have seen in Guatemala. I noticed my 25-year-old female Spanish teacher right facial muscles looked ‘tired. The right eye looked different. I asked her how bad her headache was on the right side. She told me surprised, “Very bad.” I gave her two .5 mg tabs of dexamethasone and told her to take one then and one at bedtime. The next day the face looked normal. Her pain was gone. She did not have another headache during the next six days. She could have had another serious episode later, but I never saw her again to find out. At any rate, it was just like the case I mentioned early on when I got the 50-year-old male over the hump.
In a way a temporary anterior deprogrammer is like medicine; using it properly can get the same results. When a TMJ problem is episodical, fitting one with a mouth guard may temporally reduce pain. However, we must realize that we are only swapping one unbalanced bite with another unbalanced bite, which is a lousy approach. On the other hand, an anterior deprogrammer is great as a temporary ‘medicine,’ a diagnostic device, and a preliminary treatment before equilibration.

However, continued use of a deprogrammer will surely cause problems. I would not use anti-inflammatory medication for an extended period, which may cause problems, nor would I leave a patient on a deprogrammer for a long time, which will also cause new problems.

While all of us vary SC pressure, most of us don’t change from being a light clencher to heavy one or the reverse. We may have a consistent squeezing pressure for a few days, then increase SC pressure for a few days. We not only vary squeezing pressure in our ‘normal’ day to day. SC patterns, but we can also have periods of severe SC due to an episode of increased stress, which can cause us to produce enough SC trauma to cause discomfort. We can then lose that increased stress and return to our normal SC, which is not enough to cause discomfort. Fortunately, most TMJ pain is episodic, which is important to know.

Anti-inflammatory medicines and muscle relaxation techniques can get some people over the hump, so to speak. Some patients may get relief with the right medication, but won’t get relief from muscle therapy (such as, Myotherapy, massage, or electro-stimulation). Medication and/or muscle therapy will only work for episodical TMJ (but not always), and never in constant TMJ.

Here’s why: Proper medication (mentioned above) always seems to help occlusomuscular problems, but if one continues to clench with enough intensity to keep the pain going, the pain will return when medication is stopped. Continuing dexamethasone for an extended period is a foolish choice of treatment, although 800 mg of ibuprofen 2 or 3 times a day is coincided OK by many physicians. Some new arthritis medications can help. Unfortunately, some states prohibit dentists from using some drugs unless used for diagnosis purposes, so you may have to check with a physician. Muscle therapy, that gives relief, can be used with no problem.

When inflammation in the joint and/or muscles is severe, the proper anti-inflammatory medication (one that works on joints and muscle) is the only choice, however, many of the so-called muscle relaxants don’t help. I suspect that they don’t reduce inflammation enough to handle the intense joint arthritis and muscle spasms. I have had good success with a combination of 1 mg of dexamethasone and 800 mg of ibuprofen twice a day for no more than three days. This of course depends on body weight. If that doesn’t relieve the symptoms of TMJ, then maybe it is not a TMJ problem. Medications and muscle
therapy do not affect SC patterns or reduce the existing damage. The only real solution for constant SC trauma is a balanced jaw.

There are number things that one can do to reduce the discomfort associated with SC problems. Figuring out what therapy to use is easy if you know which muscles are involved. The diagnostic tools in the book will tell us where to look. Appropriate temporary therapy can help; that is, anything that will reduce inflammation will reduce pain, at least for a short while.

Many anti-inflammatory medications are available. Some of them will work and some won’t. It depends on how much inflammation is present. If there is a little inflammation, aspirin, ibuprofen, and so forth will do the job. If the pain is intense, the inflammation is severe, so you need a strong anti-inflammatory medication, such as dexamethasone. Narcotic medications are of little value. Your patient’s physician may need to prescribe medication, threat TMJ as you would arthritis.

I have used a spray that will sometimes reduce muscle spasms, such as Fluori-Methane. It works great sometimes, but not other times. Myotherapy as illustrated in Bonnie Pruden’s book will work sometimes. Massaging the facial muscles can help. Machines that reduce muscle inflammation can help. Any of these are worth a try to get people over the hump, so to speak but temporary treatment is only for episodic TMJ, other wise; you need to get busy balancing your patient’s jaw or send them someone you trust.
My iPod movie “TMJ Video” illustration can teach you how to examine, to construct bite appliances and how to balance them including Tanner’s method equilibration.

There are comprehensive instructions by DR Henry Tanner on tape or DVD that can be obtained by calling Bill Massey at 1-800-642-1042. I have studied these tapes and found them excellent for dental study clubs, which cost around $550.

**The Balanced Bite Splint:** Muscle programming takes care of our unbalanced bites when chewing. I explained how the heads of condyles are always resting against their sockets (that is, the same three-point-contact of a balanced bite). We also talked about how in-the way teeth, that is, posterior guidance can damage joints when we clench. Let me show you how the Tanner appliance can balance the jaw.

The Tanner appliance, usually a lower acrylic appliance, creates a flat plane for posterior teeth. It only allows one cusp tip of upper back teeth to contact its flat surface. The anterior part allows us to create proper anterior guidance. The anterior guidance disengages all back teeth immediately in any jaw movement thus eliminating PG. An upper Tanner appliance has the same flat plane for lower back teeth, but its front part resembles natural anterior guidance. It takes longer to balance, but it can teach us a lot about anterior cross-over guidance.
When we use a Tanner appliance, it does not mean we are balancing the jaw. It is not much help if we do not eliminate all PG and create a proper anterior guidance angle. If we don’t take the time to do this or don’t know how, the Tanner will be just another unbalanced bite, so there is no magic in the name of the appliance; it takes skill to make it functional. Tanner’s appliance simply provides a proper platform to balance ones jaw. It still needs skilled hands to make it work. Since anterior deprogrammers prevent posterior guidance they can give the same relief as the Tanner, but there is no support for posterior teeth to keep the bite from changing, which is why we can use a balanced appliance for a longer time.

Patients with advanced periodontal disease don’t need bite appliances, because their TMJ problems have gone away. Usually, they can be equilibrated without going through the bite appliance stage. Later in my practice, I treated most TMJ by equilibration, not using an appliance.

By the way, the Tanner bite appliance is not an eating device. A balanced eating device would be an ingenious device, but it is something far beyond our balancing skills. We have to use a flat plane device to keep adjustments within our balancing skills. Appliances with many peaks and valleys make balancing the jaw nearly impossible.

When Drs. Tanner and Kadair were teaching at the Panky Institute, they used Tanner’s appliance, but when they left, the appliance was modified so that the upper cuspids were also used as stops like the back teeth. This created two major problems: (1) It opens the bite and (2) It interferes with the crossover guidance of the jaw. It is unnatural for cuspids to contact in centric. Some patients won’t tolerate this. The appliance is often referred to as the ‘frogear’ appliance. It does not restore proper function. Patients need a little space when crossing over or protruding the jaw, only a Tanner appliance will allow this. The frog-ear appliance is really a bad choice with patients with severe Class II bites. The frog-ear appliance is a good example how we can screw up a good thing.

I want to make something clear. Occlusal therapy is occlusal treatment to obtain a balanced jaw, which is accomplished using a balanced bite appliance or by selective grinding to reshape teeth (equilibration). Both ways eliminate PG and establish proper anterior guidance (AG). Anything less, may be working on the bite, but it’s not occlusal therapy. The goal of balancing ones bite is to put jaw guidance where it belongs, certainly not on back teeth, and to create a proper guidance angle. Second, making sure the posterior teeth hit at the same time in centric. A balanced jaw does not traumatize a joint or cause muscle pain.

An AGA is one of my favorite temporary bite appliances. Although it easy to make it requires more skill that an anterior deprogrammer, yet requires less time that a full-mouth balanced appliance such as a Tanner. It taught me a lot about anterior guidance, while helping patients at the same time. It should not be used every night for long periods.
However, it is great for patients that have an occasional episodical bout of TMJ or someone that could not afford the cost of equilibration. An AGA is essential in patients that have very steep anterior guidance (usually created by reconstruction).

Dentists can become frustrated and lose confidence in the value of balancing the jaw when the method they are using is not helping their patients. It may be one reason why some dentists don’t believe SC and TMJ problems are related.

A balanced bite appliance will get joints and muscles comfortable and healthy, increasing our patients’ confidence in us and in the dental profession. It is amazing how much e-mail I get that say they have lost confidence in dentists and more often than not, it concerns TMJ problems. This won’t happen when we use proper deprogrammer. However, since deprogrammers don’t balance jaws, we can get frustrated when our patients get better at first but then get worst and decide SC is not a big deal.

Most of us are too well trained to replace a bad crown with another bad crown. We want it to look right. However, many of us don’t bat an eye about replacing a bad bite with another bad bite. This sounds condescending and vindictive, but it’s not really the fault of practicing dentists. The dental schools have not taught us. There are very few knowledgeable teachers to teach dental students how to balance jaws. I visited the periodontal department in a dental school, long after I was using occlusal therapy as an important part of periodontal therapy and met a graduate student soon to graduate who had not had a single course in occlusal therapy. It was not important to him or his teacher.

**Hearing problems:** From observation and questioning my patients, I found that SC trauma could definitely cause hearing loss. It seemed far-fetched at first, but with the help of Doctor Parker Mahan (one of the most knowledgeable experts in the physiology and anatomy of the TM joint), I paid more attention to my patients hearing. I am now convinced of that relationship.

There are two physical reasons to connect TMJ and hearing. A small ligament goes through the joint cavity to the ear chamber. Doctor Mahan spoke of a case, where a woman was suffering from severe dizziness, and tinnitus. An oral surgeon gained access to the ligament and tested the pressure change in the ear chamber. He found that when he pulled on the ligament the pressure varied. The surgeon cut the ligament, which solved the patient’s problem. We do not have enough research to document the validity of this phenomenon, but I believe time will confirm this relationship.

The tympanic ligament goes through a small foramen in the TM joint socket where a thin layer of bone that separates the joint cavity and ear chamber. It is estimated that the foramen is open in about 6% of the population. This allows fluid to go from one chamber to the other (usually from the joint cavity). The incident of open foramen may be a lot higher in heavy clenchers. In other words, when SC has traumatized a joint for a long time, the fo-
ramen will probably be open. I can only assume this relationship right now, since we lack research evidence.

For example, I found that when a patient was suffering from an episode of a serious TMJ, they often reported a decrease in hearing on the problem side. In addition, I would check patients hearing from time to time and find that their hearing quality varied in their problem joint. I leave this to those more knowledgeable in hearing problems. However, anyone can check this and find that hearing does change from time to time, when a joint is acting up.

Here is an example of an e-mail concerning hearing problems: *I am perusing your web page and thought that maybe you could help me. I have ground my teeth at night for as long as I can remember. Apparently, my dad still does it (he's 54), and my grandmother also did it. I have never had dental problems because of this, and up until now, I've not had hearing problems. Back in May 2000, I went to my doc because I didn't feel like I was hearing correctly. I felt like I had something stuck in my left ear. My doc found that I had fluid in both ears, my left ear was infected and she prescribed medicine for my problems. Anyway, I've been back to see her twice since then, and I've had fluid in my ears both times. She finally referred me to an ENT doc, who I went to see yesterday. He didn't see any fluid in my ears at all, and I took a hearing test. It appears that I have mild hearing loss in the left ear, regarding low-frequency noise. The Doc thinks that my hearing loss is due to my ear infections, and TMJ. I didn't realize I have TMJ . . . is this doc's diagnosis right? He would like for me to come back in 4 months to get my retested. Thanks so much for any help.*

My reply: *I can't give you much help about your hearing loss since don't know much about your signs and symptoms concerning your joints, teeth, and facial muscles, but I can assure you that many people may have hearing problems related to TMJ. I believe it's a lot more common than many think. In approximately 6% of the population (this could be much higher) can exchange fluid between the joint and ear chamber. The reason is that in some people, fluid from an inflamed or edematous joint can enter the ear chamber through a small foramen (a small hole) in the backside of the joint cavity. If some cases it can cause ringing in the ear (tinnitus), in some cases it can cause dizziness, in some cases hearing problems and occasionally a person can have all three problems. It usually only occurs on one side, but in rare cases.

Good luck, Louis*

**Kids and SC:** SC helps align teeth during eruption. Squeezing on newly erupted teeth helps position them during the eruption period—(approximately six months to 12 years) Since the teeth are easy to move during the eruption period, kids can quickly position teeth. This tactile sense causes kids to move teeth to synchronize the bite with the TM joint. That is, kids should create a balanced bite since they clench (squeeze) in a centric position.
So, why don’t all kids end up with a balanced bite? One reason is that kids lose baby (deciduous) teeth from decay, which messes up the deciduous bite. When this happens, permanent teeth can’t erupt in the right place. In this case, a kid tries to position teeth by tactile squeezing, but fail to position teeth correctly. They have no choice but to create an acquired bite early on. These kids keep trying to position their teeth correctly, but can’t, so they often develop muscle soreness, which mimic headaches.

When kids have TMJ pains, we can use an AD on the upper four incisors, which are already erupted. It can help kids without interfering with the eruption process; however, if the splint is used every night, kids would lose their positioning ability and can develop bite problems. This why we only use these appliances every other night, which is often enough deprogramming to reduce muscle soreness, but not enough to interfere with the eruption process.

The photo show SC in 7 year old kid. Notice the chipping of the upper right lateral incisor. The previous upper photo shows the AD created that helped the kid get over her SC in just a few weeks.

Thumb sucking is another cause of a dysfunction bite you can write me if you have more questions on this.

Can weather affect TMJ? Question: I was diagnosed with TMJ about 3 years ago. I've not had any problems with it in the past 2 years until now. I have a couple questions for you. Does the change in weather have anything do with the headaches coming back? If I have been SC my teeth, I don't realize it & within the past 2 weeks my mouth has been hurting, my jaw, and especially my head from my temple to my jaw line. It is getting a little chillier around here, could that be causing some kind of drainage? Is this oriented with TMJ? I hope you can answer my questions, it just doesn't seem like my dentist knows much about it besides to get a mouthpiece. Thanks for your help! Hope to hear from you soon.

Answer: TMJ problems are episodical. They are always related to SC. SC occurs when we sleep so we cannot be aware of it unless we notice symptoms when we wake up. Most people don't notice those symptoms because they don't produce noticeable discomfort; that can fool us into believing we don't clench. However, problems do
arise when we clench more than usual. We can cause an episode of painful symptoms. You asked if the weather could affect TMJ problems and I would have to say yes. Weather changes can affect any arthritic problem. TM joint soreness is arthritis (joint inflammation). An arthritic joint in another part of the body may not bother you much until the weather changes. The same can be true with an arthritic TM joint. However, it sounds like an episode to me. Sometimes the new episode will go away without treatment when one stops the traumatic SC. Ask your doctor if he could prescribe a strong anti-inflammatory medication for no more than 3 days. Sometimes that will get you over the hump' (so to speak). If that does not work, it means that you are SC enough to keep problems going, so balancing the jaw may be the only route to take. Mouth guard won't work because they do not balance the jaw. Good luck,

What are our legal concerns? We have been coasting a long from the beginning of our profession without many legal problems. However, there will come a time when we must have patients sign disclosures that they understand the problems that can occur if they do not follow our recommended bite therapy. If they choose not to follow what is recommended, we may be protected from law suites for a while.

However, as the publics learns that the some of the things we do can cause headaches and other TMJ problems we will be sitting ducks for the legal profession. We are like any profession, some of us are good, and some of us are not. Some of us have our primary interest in our patients’ welfare and some are more interested in money. When we do something that disrupts the joint function, we are open to being accused of greed or ignorance from our colleagues but we usually aren’t sued.

I hope that dental schools will turn around someday and realize that jaw function is a lot more important than preparation line angles, etc. We, as students, should be taught how to equilibrate and use a piece of plastic to restore function before we learn how to fill cavities. Most of us had no conception of proper jaw function, however, a year of mounting models with facebow and centric bites analyzing PG and the condyle position on socket inclines would teach us the difference between an acquire bite and a centric bite. Equilibrating models repeatedly until proper jaw function is second nature would change the way we do dentistry, make it more profitable and make it more fun. Instead of having a group of complaining patients we would have many happy patients.

Another problem we have is the misinformation we get from the circuit ‘expert’ lecturers; it is often the blind leading the blind. I once watched a lecturer showing a slide how he used his ‘prize’ method of using his hand to position the mandible to find the ‘last’ prematurity on a second molar, while me and hundreds of other dentists watch in awe. It caused me a year of frustration trying duplicating his skill until I gave up. When I learned jaw function from Tanner, Kadar, and Mahan, I realize the poor ‘expert’ had no conception of proper function. He was simply full of bull.
Another example was when a colleague calls me for some information. He explained that he had taken a course on implanting some material into a bony pocket to grow bone, which is no big deal, but you first have to be sure that tooth is not suffering from SC trauma. Therefore, not having the time explain SC trauma, I asked him to call the doctor and ask him why it was not working. He did so and told me the doctor said that it did not work sometimes. I happen to know the lecturer and knew that he was not schooled in the SC syndrome. I did tell my friend how to at least take the tooth out of occlusion (which was better than doing nothing) the next time he did one.

Here is the problem; first, the tooth would not have developed the bony pocket unless SC trauma was already present, so for goodness sakes get rid of that.

Most of us have done a root canal only to have patient to complain about pain. Since many root abscesses are caused from SC trauma, it is no wonder the tooth is still under SC pressure. I have a friend and colleague who was a popular endodontist and I asked him what his secret was. He said, “I make sure the tooth is not being traumatized, but of course it is out of my hands when a traumatic crown is put on the tooth.” I believe you can see that not understanding SC trauma can cause dentists much trouble.

**Destructive periodontal disease:** When teeth become very loose, they can no longer put enough pressure to the joints to cause TMJ problems; they simply move out of the way. However, because of their enlarged sockets, they are very susceptible to pocketing. I have already mentioned that SC trauma enlarges tooth sockets, making them very susceptible to pocketing. This is a weird idea for some of us, especially periodontists. The dental schools taught us that periodontal disease caused teeth to get loose by inflammation eating away bone. While there is some truth in this, it is truly putting the cart before the horse. It’s little wonder why we think the simple and obvious progression of periodontal disease is so mysteriously complicated.

The body gets rid of bone when SC trauma (SC pressure) exceeds what the system can stand. The reticuloendothelial system (RES) produces special bone-eating cells (osteoclasts) in the periodontal membrane to absorb bone when the tooth is under excessive SC trauma. This osteoclastis (bone dissolving) increases the size of the socket and causes the tooth to be loose, which is an important part of the body’s protective system. Most people do not notice this looseness, but this is why teeth always get loose when under SC pressure. This is also why the mobility exam is so important. It tells us that SC is affecting certain teeth.

The important point is this: Long term SC can cause a tooth socket to become enlarged, to the point that the tooth becomes spongy-loose. This is a last stage of the SC syndrome. The sulcular gingival wall epithelium (the gum next to the root surface) and the epithelial attachment (the glue that holds the gum to the root surface) are always in good shape in inflammation-free gum. However, wherever we have inflamed gum (localized gingivitis),
there will be necrosis of the sulcular epithelium and loss of the epithelial attachment. When this happens, bacteria can enter the body through this opening. They just pass through the periodontal membrane and into the blood stream (bacteremia).

Because of this bacterial invasion, the periodontal membrane becomes infected (inflamed) exacerbating socket bone loss. This how we lose bone in periodontal disease, but SC trauma always starts the process. On the other hand, when we have removed the SC trauma, the reticuloendothelial system produces bone-producing cells (osteoblasts) to restore socket bone loss. This osteoblastic activity will tighten a tooth in a short time when we eliminate the SC trauma.

However, there is a problem here: Unless plaque is controlled, especially between teeth, the periodontal membrane will stay infected, which retards healing/repair. It needs gum tissue that is free of gingivitis to restore the integrity of the sulcular epithelium and the epithelial attachment so that healing can take place. This became shocking apparent to me when I started treating my periodontal patients with occlusal therapy before I did periodontal surgery (the meat of my income).

The RES and plaque control hurt my pocket book by healing problems before I could get around to surgery. I want to share a bit of personal history on how I finally came to understand the effect that SC-trauma has on periodontal disease. My periodontal training convinced me that the bite, much less SC, had nothing to do with advanced periodontal disease (APD). I was led to believe that it was a simple progression form simple gingivitis to APD. I had developed a very good flossing system, which eliminated gingivitis between teeth. (It also stopped calculus formation between teeth.)

One of my reasons for periodontal surgery was to make teeth more cleanable. It was an easy thing to sell since I was so convinced myself. When cases failed, I blamed the patient for not sticking to my plaque control routine. I was never at fault. I’m not belittling plaque control or my methods of plaque control, because it’s very important, but without knowledge of the SC syndrome I was short in diagnostic skills. A dentist friend of mine introduced me to a dentist who primarily treated TMJ. My friend thought that if we combined my preventive approach and his occlusal therapy talents, we might come up with something.

Doctor Michael Kadair used the Tanner bite appliance with unbelievable skill and was a master at the Tanner method of equilibrating teeth. Both methods produced a balance jaw. Kadair told me that a balanced jaw is the only thing that will stop the destructive periodontal problems and allow healing. He showed me radiographs of patients (before and after his occlusal therapy) that blew me away. He had actually grown bone in bony pockets (without periodontal surgery), not on just one patient, but many of them.
I spent two years in his office learning his techniques under his watchful eyes. I was truly grateful, but it so changed my method of treatment in my periodontal practice that it nearly broke me (as I have previously mentioned).

I started using occlusal therapy to balancing my patients’ occlusion and plaque control as the primary sources of treatment for advanced periodontal disease, putting surgery on the back burner. This was definitely not a way to make money at the time.

**Gingivitis:** I might as well cover gingivitis while I’m on the subject of gum disease. Bacterial plaque causes gingivitis, and always goes away when we control plaque.

Calculus can’t exist when plaque is controlled. Some patients do a very good job of controlling plaque while others don’t, but few patients can control plaque in every dental area, especially between teeth. Conventional flossing methods work between teeth in some areas, but not in most. Wherever a patient fails to clean (whether by habit or method), gingivitis and calculus will always be there.

However, with an efficient method of cleaning between teeth, it’s a breeze. *Advanced periodontal problems* will not develop without SC trauma no matter how much gingivitis is present or how long its been around. This is considered blasphemy to some periodontists. Other gum diseases, such as, Pregnancy gingivitis, Dilantin Hyperplasia, and ANUG (or any kind of necrotizing gingivitis) won’t lead to bone loss without SC trauma.

Constant SC trauma combined with lots of gingivitis in teenagers will lead to *Juvenile Periodontosis*. Some of the members of our profession still believe that this problem is an idiopathic disease, that is, there is no known cause. I have treated a number of these cases successfully with teaching good plaque control, equilibration, and sometimes using only minimal surgery.

In the photo it is easy to see gross or excessive gum inflammation (gingivitis). Many of us might start reaching for our forceps ready to make a denture. Some of us (periodontists) would prepare for surgery (as I once did).

However, when I understood plaque control, I treated many cases just like this one without surgery. The treatment was always the same. On the first visit, we had the patient brush vigorously with water. Of course, there was a lot bleeding, but we explained that he did not brush this hard normally because it was uncomfortable. When we (usually a staff member) was satisfied that he had removed as much plaque as he could, we instructed him not to brush or floss before his next visit. Three days later, we had him do the same.
thing. He was amazed how much less bleeding occurred. On that visit we cleaned between his teeth using the Mopfloss method (more on this later). There was again much bleeding from between his teeth.

On the next visit 2 days later we supervised his cleaning with Mopfloss. There was a lot less bleeding. His interest in plaque control skyrocketed. We asked him to only brush and mopfloss every other day. A week later on his next visit his tissue health was much improved. On this visit we taught him how to clean around the margins of his capped upper teeth using a Perioaid™. The Perioaid is a simple device that holds about a half inch of a round toothpick. Two weeks later we scaled his teeth to remove calculus.

He did not have any bony pockets. When health was restored I sent him to a good restorative dentist who replaced his faulty crowns (with the thick margins) with quality crowns. In this particular case, I did not have to do periodontal surgery.

OK, why did I go through all this? Do you think for one minute that he would have taken control of his mouth if he had not experienced the improvement in his mouth that he accomplished himself? No way! Countless cases like this over the years produced the same results. Patients became experts in controlling plaque. Believe me, this created a bond of kinship that lasted for a long time, maybe forever. Those are some of my happier memories during my practice life.

**Root canals** are needed when the pulp of a tooth has abscessed. It is a technique of cleaning the pulp canals of teeth, then filling it with an appropriate material.

We can recognize a problem by swelling, pain and x-ray. X-ray shows a radiolucent area at the end of the root, that is, a dark area at the end of the root. However, the radiolucent area can fool us sometimes. Not all radiolucent areas depict an abscess, because SC trauma can cause a radiolucent area. We can check the tooth’s pulp to see if the pulp is “dead” but sometimes our pulp tester won’t work if the tooth has been capped.

What I am saying is that root canals are not always indicated. A case in point: A patient went to a dentist who found radiolucent areas on 3 teeth. He recommended root canals. The teeth were sensitive but no real pain. The patient went to another dentist who was competent in occlusal therapy. He suggested equilibration.

To start with, he made a two tooth anterior deprogrammer. After a few days using the anterior deprogrammer the teeth was no longer sensitive, which confirmed his diagnosis. He suggested that the patient wear the deprogrammer every other day. (*This in a sense cuts SC trauma in half*)

The patient went thru equilibration and has had no other problems.
Many teeth are irritated by SC trauma, sometimes causing an abscess and sometime not. When a tooth has had a root canal that is caused by SC trauma, a root canal will often fail if the tooth is not “unloaded,” that is, is relieved of its SC trauma.

**Dental Implants:** One can lose dental implants by way of destructive periodontal disease. It is exactly the same process. SC on the implant makes the implants socket bigger, which loosens the implant. Gingivitis allows the bacteria to invade the enlarged socket causing bony pockets. It could be called, ‘Advanced Perio-Implant Disease,’ but it is simply-destructive periodontal disease. It’s the same progression.

Light clenchers may not destroy implants, but heavier clenchers always destroy them in an unbalanced bite. All implant cases should have balanced jaws, especially the heavier clenchers. Let me make this a little clearer. Implants work great after they are embedded into jawbone, they become rock solid. The problem occurs when the implant is capped with a crown that is not balanced. During SC, the patient finds the too-tall crown and tries to move it out of the way, and what makes things worse, is a crown with thick hard-to-clean margin. I have balanced implants through equilibration and they tighten up just fine, that is, if bone loss has not gotten out of hand. Poor cleaning around an implant will cause gingivitis, but usually won’t loosen the implant. If you were into implants, it would be a good idea to the balance the occlusion before and after the completion of implants. We should avoid implants in heavy clenchers because they will fail.

**Treating advance periodontal disease:** I believe that we should be well trained in jaw function and how to balance jaws. Unfortunately, many of us, including the specialists, are not trained in the art of balancing bites. This is why SC is overlooked as a cause of advanced periodontal problems. When I did not understand SC trauma, I could not correlate it as a cause of bony pocket formation. Now that I understand it, I can determine the patients SC patterns by simply observing a bony pockets location.

There is no reason why general dentists should not treat TMJ and periodontal cases. Even if the dentist does not like surgery, he should at least plan the case. It’s his or her responsibility as a ‘Decathlon Dentist.’ When I have completed the exams to detect SC and a probing chart, I knew a lot about my patient. A bony pocket is enough, by itself, to expose a clencher. I learned that the patient needs better plaque control and occlusal therapy to stop the process of advanced periodontal disease.

In my learning stage, I started the patient with an AGA (or any anterior deprogrammer) and mopflossing. After my patient had had a chance to see improved gum health from mopflossing, I would do the necessary scaling. When patients realized that they could attain gum health on their own, they developed confidence in my treatment and me.

I put the patient on hold for several weeks or longer. The patient was controlling plaque, and the deprogrammer (every-other day) was controlling SC trauma. The patient was safe
from additional problems. They had happier joints, muscles, and teeth. I could hold a pa-
tient as long as I liked—not bad in a busy practice. Patients were happy. The longer my
patient controls plaque through mopflossing, toothpicks, brushing and so forth, the easier
it was to eliminate pockets later.

Many pseudo-pockets, which are pockets due to inflammation, went away, and the bony
pockets got better. Sometimes during this stage I equilibrated so that the deprogrammer
was no long needed. I could wait, as long I wanted, to do surgery.

Therefore, when we do the above we do not have to be in a hurry to start periodontal re-
pairs. Later, in my practice (and you will do the same) I quite using deprogrammers, I
equilibrated early on. It is easy to equilibrate most advanced periodontal cases, since
most of them don’t suffer from TMJ. There were occasions where I used a Tanner appli-
ance when a heavy clencher needed one. It’s amazing how much nature will help when
SC trauma is removed and the patient is controlling gingivitis with plaque control.

I will not go into the surgical techniques because that information is readily available and
you probably know already. I just wanted to point out a different approach to conven-
tional periodontal therapy. Believe me, doing surgery on a patient after the above
treatment is a breeze. There is very little bleeding and healing is uneventful, hardly a need
for periodontal packing or pain medication.

**Soft tissue graphs:** I was fortunate to have the late Dr. Billy Penel as my teacher when I
was in my periodontal training. He and his staff did the first reported free tissue graph. So
I started early in my practice doing graphs.

Unfortunately, we were not sure what caused the gum recession. I now know that SC
trauma and over brushing are the causes. However, not knowing this initially, I did graphs
that were uncalled for. Some free graphs got me into some unpleasant situations. The type
of tissue that I transplanted did not look like the gum I was replacing. This made the new
gum tissue rather strange looking.

When I learned the cause of gum recession, I realized that graphs were not need very of-
ten. When I started controlling SC trauma and took patients off toothpaste, recession of-
ten repaired itself. I still did a few, but nothing like I did before.

I would give soft tissue grafts some careful thought. However, if you do decide to get
them, make sure you or your periodontist has eliminated the causes of the recession,
which includes SC trauma and over cleaning. That may be the best place to start or stop.
Repairing gum recession has a high failure rate because dentists don’t address its causes
first.
You don’t always need to strengthen thin gingival tissues, if you stop over cleaning and SC trauma, if it’s a problem.

**Tinnitus (ringing in the ear):** **Question:** I am a dentist 51 years old and about 6 months ago developed intermittent ringing in my ears, it is usually always noticed upon awakening in the morning. It also seems to stop while I am sleeping at night, rarely does it begin or end in the waking time of the day. I have seen an ENT doc, and he can find nothing wrong with my ears, I have had an MRI, which was normal, I have seen a neurologist to no avail. I have always been a sever bruxer, and have had a splint for about the last 20 years, my canines are the same length as my lateral incisors, just to give you an idea of the extent of the bruxing. I have also tried several of the newer snore appliances, to no avail and am back to just the soft type splint for the maxilla. The ringing usually stays for several days with non-ringing days only lasting for a day or two at best. To the best of my knowledge it has never started when I was awake always when I am sleeping. This not knowing the cause of the problem is almost as difficult to deal with as the actual ringing. I know that I clench my teeth because I find myself doing that in the daytime often. The last few months have been especially stressful so I'm sure this has contributed to the bruxing. Occasionally I have some clicking of the joint, but this was mostly associated with the wearing of the snore type appliances. I usually awake with stiffness in my neck muscles and have tried several pillows to adjust head position, my chiropractor suggested that I sleep on my side, as the ringing seems worse when I have my head turned to the side when I sleep on my stomach. The ringing is variable in intensity of volume and I can instant increase that volume by stressing my jaw muscles and activating my mandible.

Could you please advise me if you have seen anyone with similar symptoms and what course of treatment if appropriate you would recommend. I would like to talk to you personally if possible; if that is acceptable please e-mail me with a number where you can be reached and a convent time to call; I would be happy to compensate you for you time. If not, please e-mail with any info you have about this; it will be greatly appreciated.

**Answer:** Nice to hear from you. Ringing in the ears is a very common symptom of SC. Could you tell me (1) which ear rings or if both, which rings the most, (2) notice which way you mandible swings on opening, and (3) see if you can tell if there is an initial jog, one way or the other, at the beginning of opening. Usually, the ringing will stop when we properly seat the condyles during SC. Most bite splints are not balanced devises so they do not allow the condyles to seat correctly (when SC). Consequently, there is irritation to a joint apparatus causing enough inflammation or irritation to start tinnitus. Just how the irritated joint apparatus causes tinnitus can be better explained by Doctors Mahan and Gremmion at the University of Florida, but if could be the tympanic ligament pulling on the ear apparatus, as well as fluid entering the ear chamber form the joint. Regardless, when the condyles seat properly during sleeping, SC trauma does not cause this problem. Of course there could be another cause of ringing in an ear that I’m not aware of. We can eliminate every symptom of
SC when we properly balance the bite with either a balanced bite appliance or balanced the teeth correctly by the Tanner method of equilibration. Tinnitus is intermittent because you vary the amount and intensity of SC from time to time.

Using anti-inflammatory medication such as, .75 mg to 1 mg of dexamethasone combined with 800 mg of ibuprofen, 2 times each day for no more than 3 days will sometimes stop the tinnitus if the joint inflamed. However, this is a diagnostic procedure than a treatment. If this medication does not relieve the ringing, then it may have another cause, but the odds favor a TMJ problem. Sometimes, this one time procedure will eliminate joint inflammation enough to get you over the hump, so to speak. Maybe, you will not clench enough to create the amount of SC trauma needed to start the tinnitus for a while. This noninvasive approach has worked often in all kinds of TMJ problems.

Another approach would be an anterior deprogrammer, which will prove or disprove SC trauma as a cause. I will be happy to send you a video on its construction and use. No compensation is accepted but thanks for the offer. Good luck.

**Occipital Neuralgia** is a problem caused by irritation or injury to the occipital nerves. The symptoms include facial pain, headaches, and occasionally migraine type pain. I’m not qualified to diagnose this problem, but the symptoms are similar to TMJ.

First let me get the syndrome picture into perspective. All of us clench, that is, squeeze our teeth together when sleeping, but many of us are not aware of doing it. The SC syndrome could also be called the occlusomuscular syndrome, which is a dysfunctional relationship between teeth and muscles that control the mandible. Since the dysfunction is cause by SC, it’s a little redundant to call it the occlusomuscular syndrome. Therefore, I chose to call this complex problem the *SC Syndrome* as the all-inclusive name of occlusomuscular problems. Under this heading, we have other syndromes such as the TMJ syndrome, the advanced periodontal disease syndrome, the damaged dentition syndrome, the tooth sensitivity syndrome, and the drifting-teeth syndrome. To complicate things there may be a combination of these sub-syndromes. However, all of these belong to the SC Syndrome.

Some Doctors may question the name, but when they understand how the different things people do with their teeth (when SC) affect different parts of the head and neck, they will find it an appropriate label. Each of these sub-syndromes has obvious and not so obvious symptoms. For example, the TMJ syndrome can include, facial pain, neck ache, hearing problems, jaw pain, headache and migraine-like pain and joint pain (earache-like pain). These symptoms could be caused by something else other than SC, such as, damage to the occipital nerves, but unless the examiner has a working knowledge of the cause and effects of SC, he or she may miss-diagnose the problem, which will lead to the wrong treatment.
Universal unawareness of the SC syndrome is a major problem in the medical field. In the dental field, there are very few of us knowledgeable and that includes the dental schools. SC is just not recognized as a major cause of head and neck problems, so diagnosis and treatment are not developed. Consequently, the rest of the medical field is not aware of what can and should be done, which can lead to miss diagnosing neuralgia. Someday, all doctors will have the knowledge and exam techniques to at least exclude SC as a problem.

While I am not qualified to diagnose neuralgia, I have been able to refer or treat patients correctly because of my differential diagnosis skills of head and neck symptoms related to SC. Those that do treat neuralgia would profit from the same ability. These exam techniques are available the book and on my web site.

A recent e-mail made me aware that I had overlooked writing about the above.

Hello: If you have a medially displaced meniscus, would that cause pressure on the vestibular and or cranial nerves? Can you have both TMJ and occipital neuralgia? Does this treatment help with occipital neuralgia? Thank you

My reply: The TM joint disc is very complex. The disc covers the head of the condyle like a football helmet. Unlike other discs, its movement is controlled by three things: (1) The pressure of the condyle, (2) A small specialized muscle at the front of the disc, and (3) Elastic tissue at the back of the disc. Movement is always controlled by all three (I call it Triplex). If one of these is missing, especially condylar pressure, the disc will malfunction, but this only happens during SC. A displaced disc, which is always caused by SC, can be temporary (common) or permanent (rare), but there is no way occipital nerves can be directly affected. The problems of diagnosis are explained above. I suppose one could have both occipital neuralgia and TMJ at the same time, but I suspect that it is one or the other. One should first decide if the symptoms belong to the TMJ syndrome, if not, differential diagnosis can continue. I say this because TMJ is far more common than other neuralgia and is easier to detect. Lastly, balancing ones jaw, which is the proper treatment for TMJ, will probably eliminate the symptoms, but will not help the occipital nerve damage problems. However, the odds are, that it was TMJ to begin with. If occipital neuralgia was the correct diagnosis, then TMJ treatment won't work. Good luck, Louis.

Tactile sense: It’s the reason restorations and some orthodontic procedures can cause problems. Changing the shape of a tooth a crown can cause a patient to clench on it to position it is a more comfortable place. In other words, they want to move it out of the way. The new feeling that the over contoured crown creates makes them to want to take action to align things, which can cause SC problems. I get much e-mail saying that a new crown has cause TMJ problems. Equilibration would change this.
Controlling gingivitis: The recent assumption that constant low-grade inflammation may contribute to heart disease should stimulate some interest in the constant bacteremia from interdental inflammation that is so common in humans. There is reason to suspect constant interdental gingivitis as a source of constant low-grade bacteremia source; in fact, it may be one of the most important.

Severe gingivitis causes a low-grade fever. In the literature they have discussed the influx of microorganisms into the bloodstream through oral tissues and its importance. I have no doubt that antibiotic prophylaxis is important when treating endocarditic patients. Nevertheless, what bothers me is how we overlook the frequent bacteremia in patients with significant gingivitis. During my graduate training (30 years ago) we did an unpublished study that revealed all patients with moderate to gross gingivitis had bacteremia following tooth brushing and eating.

Reinhardt reported bacteremia following tooth brushing and eating. He (a physician) suggests that antibiotic prophylaxis should be used not only with normal periodontal therapy but also when teaching oral hygiene (because of inflammation), which covers about everything else we do. He stated if optimal periodontal health is achieved and maintained, the risk of a systemic bacteremia is minimal. It’s a little embarrassing that physicians remind us about interdental inflammation. Remember our rejection of Dr. Bass teaching us about bacterial plaque?

What Reinhardt suggested is correct. A bacteremia occurs through a non-epithelialized gingival tissue. The necrosed sulcular or pocket walls are always lacking epithelial attachment. This allows an open pathway to the bloodstream, which is a bad situation for patients at risk of infectious endocarditis. We don’t pay much attention to this, but we should. The bacteremia may play a significant influence in general health also.

I hope we don’t have to wait on physicians to remind us we should not put the oral flora at risk by using chemical or antibiotic therapy in the mouth to eliminate plaque and inflammation (gingivitis), which it does not do. They learned these things five decades ago when they tried to use antibiotics and other microbe killing medicines to treat vaginal problems. They found that they killed the vaginal flora and its preventive effect, which caused inflammation in the cervix and other problems. I hope dentistry will discover the ill effects bacterial killing medicines might have on the integrity of the oral flora.

The recent assumption that chronic low-grade inflammation may contribute to heart disease should stimulate some interest in the constant bacteremia from interdental gingivitis that is so common in humans; there is much reason suspect chronic interdental gingivitis as a source of chronic low-grade inflammation; in fact, it may be one of the most important.
A review of the literature will give us the range of ideas concerning occlusion and plaque control. Every GP or specialist, academic or in practice, has his or her idea of occlusal dysfunction and its effect, as well as the physiology and pathology of oral microorganisms and their effect.

**A Review of the Literature:** There is very little written claiming SC as a primary cause of occlusomuscular problems. The literature, which supports occlusion as a cause of TMJ, assumes malocclusion to be the problem. (11) Others believe that malocclusion does not have a significant role in TMJ. (1) (13)

The main symptoms of TMJ include facial and joint pain, limited opening, deviation on opening, and noisy joints. If you don’t have these symptoms, you must be asymptomatic. These symptoms are advanced symptoms in the SC Syndrome cycle, and keep in mind that TMJ is a stage in the cycle.

Displaced discs capture researchers interest, but they don’t seem to agree on its role, for example, does it predispose the symptoms or does it occur later?

Splint therapy varies. Some doctors claim success in pain control but little success in disc recapture or elimination of joint noise. Others claim complete success. (2) Those who use anterior-reposition appliances often claim that they recapture discs. Overall, there is mass confusion but once one understands the SC Syndromes cycle, the confusion disappears.

The literature that supports malocclusion does not note bruxism and almost never mentions SC. They focus on malocclusion. None mention balanced bites. As you know by now, restoring function is my primary concern in occlusal therapy. Going from one dysfunctional state to another dysfunctional state does not make sense to me. For example, anterior reposition splints, which are designed to position ones jaw forward to capture a displaced disc, are not functional. It is not balanced. The last thing we need to do in bite splint therapy is to reposition ones jaw. We always want it in centric. Any unbalanced splint can cause problems. We are led to believe that one can capture a disc by using an appliance that moves the condyles forward so that they are under the anterior displaced disc, but that is a foolish thing to do. It is not functional.

Think for a minute. There is usually only one displaced disc, not two, so the poor normal disc has to sit there in an unnatural position, which is certainly not a happy situation for the healthy disc. One does not have to imagine what happens to heavy clenchers when placed on one of these devices for a long time. I’ve seen what happens. However, I don’t want to just pick on anterior-reposition-splints because all unbalanced splints are bad when used for a long time.
Kampe reported that a 10-year follow-up of patients with restorations and patients with intact dentition revealed that patients who had restorations, or who had restorations since the first exam, showed a significant increase in TMJ and SC. (23)

Another problem is ‘not understanding’ the progressive nature of the SC Syndrome. Onizawa reported that on a four-year reexamination of 275 university students, 52% of the original asymptomatic students reported symptoms and most students who were frequently aware of pain at the first exam, reported a significant decrease in pain. (24) What probably happens (which is very common) was that the more advanced TMJ students progressed to the final stage of the SC Syndromes cycle, that is, the in-the-way teeth becoming very loose; the loose teeth can no longer put sufficient trauma to joints and muscles thus reducing the severity of TMJ symptoms. On the other hand, some students could have reduced their SC intensity, which would also reduce the severity of TMJ symptoms.

You may remember that I spoke of the subtle signs, the ones that we usually miss, but they are the very signs we need to diagnose SC (and the problems it causes). It seems that we only tuned in to the obvious signs and symptoms patients reveal. Otherwise, nothing else is going on, but nothing could be further from the truth.

Take for an example two studies done to decide if asymptomatic patients with no history of TMJ pain, joint noise, deviation or limited opening could have disc derangement. Both used MRI examination. Kircos reported displaced discs in 32% of asymptomatic patients. (3) Liu reported the same results (32%). (4) Katzberg reported 33% of asymptomatic patients have displaced discs and reported that bruxing was statistically linked to disc displacement. (5). However, finding a displaced disc with MRIs is questionable. The fact that the condyles may be down the slope—if the MRI was taken when in an acquired bite—would give an allusion that a disc is displaced.

Augthun reported that the degree of disc displacement with repositioned and normal disc have the same percentage of clicking and mouth opening. (1) It has been my experience that its anterior guidance that’s too steep that causes clicking and popping, whether the disc is displaced or not. Non-repositioning displaced discs don’t click, but have a dull thump sound instead, two different sounds. The dull thump sound is caused when the condyle goes across a fixed disc, while clicking is caused when the head of the condyle is unseated (loses its normal condylar pressure) when the mandible is trying to function with a guidance that’s too steep. This allows the pterygoids and the elastic posterior disc apparatus to do their thing. When guidance is on posterior teeth, it is always too steep.

We often assume that displaced discs are only displaced anteriorly but Katzberg has shown that rotational disc displacement is presence in 26% of disc displacement cases, some with pure medial or lateral displacement, but most with anterior displacement. (6) Rammelsberg (7) and Matsuya (8) reported similar data. The inferior surface of discs seems to get more irritation than their upper surface in an unbalanced jaw. (9)
I have suggested that orthodontics can lead to SC trauma problems. Most patients I’ve seen who have had orthodontic treatment seem to have characteristic occlusions—a type of moderate bilateral Class II. Many studies claim orthodontics does not contribute to TMJ problems. (10) (12) some pre-orthodontic patients have symptomatic TMJ already, and many of them will show signs and symptoms of SC trauma. I have never seen a post-orthodontic case with a balanced bite. Treating TMJ cases with orthodontics alone doesn’t work! McNamara suggested pre-orthodontic cases with TMJ should have occlusal therapy before orthodontic treatment. (12) Liu reported that 44% of adult pre-orthodontic patients and 17% adolescent pre-orthodontic patients have TMJ symptoms. (14) I believe it would be better to balance all post-orthodontics cases that are mild to moderate clenchers, and those with uncomfortable TMJ problems (heavy clenchers) are best helped with balanced Tanner appliances. Even those experienced in equilibration have trouble keeping heavy clenchers comfortable. I don’t mean that you should not equilibrate, but we must protect them with balanced Tanner appliances. Heavy clenchers can unbalance a balanced bite is short order. Remember, it’s SC that cause unbalances bites in the first place.

A balanced Tanner used occasionally greatly reduced the refinement necessary to keep a heavy clenchers bite balanced. Keep in mind that orthodontics cannot create a balanced bite; only by equilibration can one balance the dentition.

I have given you many things that conflict with the statuesque and I’m fixing to say something that I have been hinting at from the beginning of this book. Almost everyone has a good joint and a bad one; a functional joint and a dysfunctional joint; if you spend some time examining joints and dissecting them (or viewing videos of dissection) you will come to the same conclusion. This is why we have a favorite chewing side (a functional side) and a nonfunctional side. It’s why we have steep guidance on one side. It’s why we sometimes have a noisy joint on one side. In addition, it’s why we have headaches (muscle aches) on one side.

We talk of noninvasive (temporary) treatment, such as, using medication, etc., instead of using a balanced splint therapy or equilibration to handle TMJ discomfort. We have two types of discomfort—acute and chronic. It makes good sense to treat acute TMJ patients in a temporary way. A short period of heavy SC causes the acute symptoms. The heavy SC usually won’t last but if the patient continues with enough moderate SC the discomfort may not go away. To put it another way, if the patient clenches enough to keep the acute symptoms going, something must be done to stop the symptoms for a while—to give the joint a break. That is, to let the joint apparatus return to its normal chronic-condition.

To help you understand this, let me review a case I have already mentioned (the previous case brought to me in Guatemala). He had an upper right posterior tooth removed six months before and had developed serious TMJ discomfort—even glandular swelling.
They had treated him with antibiotics for months with no results. The swelling on the right side of his neck had fooled the physicians and dentists. A quick exam revealed limited opening and a painful and noisy right joint. I put him on a moderate dose of dexamethasone and in 48 hours he was comfortable and the swelling almost gone. If he had been a heavy clencher, his relief would have been of short duration. Here’s what probably happened. He was probably a moderate clencher with moderate symptoms before they removed the posterior tooth. The quick change in his bite caused him to temporally clench more than normal. The loss of the upper right molar allowed him to squeeze (clench) on his bad joint, producing acute inflammatory arthritis.

Although the heavy SC had stopped, he still clenched enough to keep it acute. In his case, he could have had relief from the acuteness with the proper medication to zap the joints acute inflammation. On the other hand, he may have only gotten temporary relief with medication if he had been a heavy clencher. I have used noninvasive treatment often with pain reducing results, but if you think we cured those patients, you badly mistaken. I only got rid of their pain, they would continue to damage joints and/or teeth and periodontium (depending on how much SC they would do). Treating chronic painful TMJ patients with noninvasive therapy is foolish; they need more help than that! Noninvasive treatment is pill-treatment to reduce pain, but it does not solve SC trauma problems.

Since most of joint pathology and periodontal studies don’t include SC as a cause of TMJ or periodontal (and other dental problems), it’s no wonder we do not consider SC a problem. Please don’t get confused in the occlusion arena--it’s SC trauma not, malocclusion that causes the TM joint problems. Practicing dentists probably know this, but don’t talk about it. There is no question as to the role of SC. One has simply to look at the early signs and symptoms instead of just the obvious ones (late stages) to get the whole picture. When researchers begin to explore the subtle signs of SC, then SC will hold its proper place in the etiology of dental pathology. When that happens, dentists and dental pathology will hold a much bigger role in the general health of people.

**Plaque Control:** Researchers often fail to consider several things that can affect the efficacy of their research concerning plaque control, the most important being their ability to recognize *not-so-obvious* gingivitis. That is, inflammation hiding between the teeth in the sulcus that can only be exposed with probing.

Dental plaque is made up of the many different microorganisms. There’s a natural family of mouth-organisms, which you and I call *oral flora,* that play an important role in the general health. The bacterial count in plaque is staggering; it has millions more organisms in a cubic millimeter of plaque, than in the entire oral flora.

It’s the amount or volume of organisms that make plaque toxic to the gingival tissues. There’s no *specific* organism that makes plaque toxic; it’s simply the compounded effect of plaque’s mass of organisms. Recent incorrect research has led many dentists to believe
that a specific organism causes advanced gum disease. This is not true. When pockets (sulci) are shallow, bacteria that like oxygen hang around but when the pockets are deep, bacteria that don’t like oxygen move in. In other words, microorganisms are opportunistic. This is always the case. When the pockets tooth surfaces are keep clean, the strange bacteria go away. We have easily proven this. The antibiotic approach to treating gum disease is poor choice or maybe stupid is a better choice of words.

Plaque control means removing enough bacterial plaque often enough to prevent gingivitis and decay--anything else, is ‘lip-service.’ It takes two to three days for plaque to organize and 90% of it accumulates between teeth, which explains why most decay and gingivitis (and pockets) occur in interdental areas. We need to know how to detect not-so-obvious gingivitis to decide how effective our patients are at cleaning between teeth. Therefore, it’s the absence of gingivitis that tells us our patients are controlling plaque.

So how do dentists fall into traps like antibiotic therapy and other myths I am going to mention? Of course it goes back to dental school training. Why would someone want to use enough microorganism killing medication to wipe out plaque that has by far more bugs than the natural flora? It does not take rocket scientist to figure out that it will sure as heck kill the oral flora, something desperately needed. Remember what the physicians learned from using penicillin in the vagina four decades ago.

Let me give an example of our training. I went to a dental school where a friend (and colleague) was teaching periodontics 101. He was not interested in my theory for controlling plaque. I wonder around watching students examine each other with a perio probe. I asked one student, “What kind of shape is he in?” He replied, “Great, nothing over 3 millimeters.” I asked, “Why is he spitting out so much blood?” His reply, “Oh, sir, everybody bleeds on probing.” The student was right, everybody does bleed on probing. However, my colleague was not interested. Therefore, we learned in school that gum health was measured in millimeters not in tissue inflammation.

At about that time, I had been asked to do some periodontal surgery at the Mandeville hospital for the retarded. When I saw the situation, I knew it would be a never-ending job so asked the director if I could try to design a way to help without doing surgery. I took ten kids and personally cleaned their teeth with a Broxident toothbrush every third day using a mouthwash to make it more pleasant; and compared them a control group of ten kids. I did not use flossing. After a couple of weeks I showed the director the difference in gingival health by using a perio probe. He was convinced. I trained 3 nurses how to use the Broxident. We sterilized the actual brushes in a sterilizing solution so we would not have to keep up with ‘individual’ brushes. The tooth-cleaning nurses saw the kids every third day and thoroughly clean each kids teeth. The kids loved that day by the way. The program was successful in reducing bleeding and the use of antibiotics to control infection (especially the bed ridden kids). I reviewed the program a year later to seen how it
was going. I ask one of the ‘tooth cleaning’ nurses how they could tell if they were doing a good job. She told me, “If we get bleeding, we know to do a better job in that kid.”

In a journal I reported that cleaning every other day ‘efficiently’ (even every third day) would control gingival health. One doctor sent me a letter and said I should ‘tarred and feathered’ for suggesting every third day instead of three times a day.

To add to the above story, when I was teaching a course in preventive periodontics at the LSU Dental School, we did a study to show the difference in tissue free from inflammation and ‘normal’ tissue. Dr. Ray Broudreaux had ten students clean between teeth on one side of their mouth with the mopfloss method once a day and the other with the Bass flossing method. After six weeks the students donated their interdental papillae (by papillaectomy). Broudreaux reported it in the Louisiana State Dental journal that the difference was staging. The mopfloss side had papillae almost free of round cells, thick epithelium inside and out, and a blunted apex. The Bass side revealed thin or ulcerated epithelial walls with typical massive round cells seen in ‘normal’ inflamed tissue. Further, he reported that before the removal of the papillae the mopfloss side did not bleed on probing, while the Bass side did.

**Literature Regarding Plaque:** Reviewing the literature shows that visual absence of gingivitis does not mean the interdental tissue is free of inflammation. If some healthy looking sulcus or pocket bleeds on probing, the site has gingivitis. Gingivitis means that the site is inflamed and devoid of sulcular epithelium and epithelial attachment. This leaves the periodontal membrane unprotected. Caton reported that 67% of healthy looking interdental tissue has gingivitis. (15) I find this figure low. Very few people control plaque in the interdental area.

The role of chemical and mechanical removal of plaque and inflammation has had much research attention. Gusberti reported 95 to 100% reduction of gingivitis and bleeding sites with 0.12% chlorhexidine dehydrogenate (CHX), though he did not claim reduction of plaque per se. (16) Overholser reported 50% reduction in plaque and 36% reduction of gingivitis with Peridex™ (PX) and 36% reduction of plaque and 30% reduction in gingivitis with Listerine. The author suggested that both were effective in the control of plaque and gingivitis confirming the previous recommendations of 2x 30-second rinses per day as an effective regimen for gingivitis control. (17) Eaton reported it a little less effective. (18) Ross reported Listerine an effective regimen for gingivitis control. (19) I have never found a single patient referred to me who was on these regiments that controlled plaque or gingivitis. These claims are unbelievable to me or to anyone who carefully examines the interdental gingival health of patients.

I believe the problem in the great variation in research results, lies with the clinician’s ability to detect early (not so obvious) gingivitis. The only other reason is out right fraud. There are only two ways to detect plaque control (1) the absence of bleeding on probing
and (2) the absence of calculus. You cannot have the absence of gingivitis if calculus shows up every three months.

**Does Flossing Really Work?** I can tell you for sure that this is a tremendous flaw in dentistry. Conventional flossing does not control plaque between teeth—it will work in some areas—but I have never seen a patient control all interdental areas. (None of dental student that was free of inflammation when I started a class.) One is supposed to scrape each tooth surface between teeth with the floss, but most people do not have enough dexterity to do that effectively. Fillings and caps prevent many teeth from being scraped because of their margins. Many people damage their gums by trying to get ‘under the gum.’ Patients don’t take much interest in flossing when it doesn’t seem to help much. The problem in flossing is that we are trying to do a job with the wrong tools. When flossing was used to remove bits of food from between teeth any kind of floss would do the job, but now we are supposed to remove plaque. That’s a different ball game.

**Mopfloss:** I hope I have made it clear that conventional flossing does not remove plaque. The Bass method requires much dexterity but even if our patient has sufficient dexterity some mouths are uncleanable because of raged or overhanging restorations. One cannot clean the interdental tooth surface if it cannot be ‘scraped.’ With skilled hands, front teeth can sometimes be cleaned. True, it may work in an occasional patient, but it is so rare I would not think of recommending it as a primary technique.

A fellow periodontist, Dr. John Hankin, showed me his ‘bulk-flossing method.’ It involved several feet of floss (tape) folded over at about 12 inch intervals to make sort of a ‘mop.’ A single piece of floss about 18 inches long folded over the mop as a leader. The leader is placed between contacts and into the interdental space. The mop is then pulled through the space between two teeth to remove plaque. Obviously, the mop needs be tight enough to create cleaning pressure. In a large interdental space he would shoeshine each tooth surface. Since interdental spaces vary in size, one must change the size of the mop as needed (not a problem). In other words, the mop must be snug, but comfortable. If the mop is not snug, the system was not as efficient.

I’ve modified Dr. Hankin’s bulk-floss cleaning method, but the principle is the same. Over the years (with help of my patients), I found that ordinary six-strand embroidery thread made a better mop and my patients dubbed it mopflossing. It was softer and absorbent. It was easy to prepare. It is easier to change the mop size. My patients and I developed it into an incredibly efficient method of cleaning between teeth. It was so efficient that my patients did not need their teeth scaled every three or six months. They developed an unbelievable state of gum health. I had hundreds of patients that did not need scaling for years, including me. I started using the Mopfloss 25 years ago and have not needed my teeth scaled in 25 years. Most of my patients taught their family and friends how to use the mopfloss technique with no problems.
Two things will keep any flossing technique from working are: (1) The interdental space may be uncleanable because of a gross overhang, and (2) the space is too small for even a small mop (most common between lower front teeth). However overhangs are not as critical with the mopfloss method as it is with the ‘Bass’ method. The loose weave the cotton embroidery threads can work their way around and under overhangs. However, sometimes overhangs can be so bad you must remove the overhang or replace the restoration. In addition, calculus can be so thick that we can’t accomplish flossing.

When I let my patients, obtain gum health before I scaled, they became convinced that they were the ones that obtained interdental health. Patients were grateful to me for showing them how to get a healthy mouth and it gave them confidence that they could control interdental health and calculus formation.

My good friend the late Dr. Bob Barkley did not challenge the efficacy of the Mopflossing technique, but he did question the need for such efficiency. He was correct when one considers only mild clenchers, but he was not correct when considering heavy clenchers.

Unfortunate, for me as a periodontist, patients so reduced the swelling in the gum tissue between teeth that periodontal surgery was often not needed. I finally learned that most gum pockets between teeth (save bony pockets) could be eliminated with the technique.

Unfortunately, the Mopfloss method is a ‘show and tell technique.’ Someone needs to show you how to do if you want to do it correctly. You can’t just pick it up at the store and use it correctly. When a company tried to market Mopfloss, it was not successful, for several reasons. One was that it had to be taught and another, it was expensive to manufacture. However, I believe the biggest reason was that it was a too efficient for some dentist to incorporate it into their practice. I know that sounds like sour grapes but I remain steadfast. There is an iPod movie available on the mopfloss technique at www.sleepclenching.com

However, for me, when I let the patients obtain health before I scaled their teeth, it established a bond of kinship. From a dentist’s point of view, this can be helpful since the patient will be so grateful, for showing something wonderful; he or she is more likely to accept my treatment recommendations. At least, that was what happened to me. I tried to make that point in my lectures.

Some interdental spaces are too small even for one thread (which of course is two threads when used in the mop). Front teeth are often too tight for the mop. You have three choices: (1) Separated the six strands, only using three or four threads to make a smaller mop, (2) wedge several pieces of dental tape between the anterior teeth which is a ‘bulk’ cleaning technique, or (3) use the Bass method which can remove plaque on anterior teeth.
Special Plaque Control Technique: Toothbrushes regardless of shape, stiffness, size, polished or unpolished bristles, hand-held, or electric with some magic motion are not the best tools to clean deep facial and lingual sulcus and especially those sulcus hiding overhanging or rough margins of fillings or caps. Porcelain-faced crowns are at the top of the list in creating overhangs. The front margins have to be thicker, to accommodate the porcelain, so that it will look good. It’s so common that it should be called ‘PFC disease.’ A crown with a thick margin would be a paradise for the microorganisms in plaque.

**Toothpicks, Stimulants™ and soft-picks by GUM™** can do a good job of cleaning between teeth, but not as well as mopflossing. However, toothpicks can be used to clean under the gum on teeth that have caps with thick margins. I had to teach him how to use toothpicks to clean (control plaque) around the overhanging margins. Toothpick cleaning with or without a Perioaid™ is a fantastic plaque control method for those who have many porcelain-faced crowns. As mentioned, porcelain crowns always have thick margins on the front side (under the gum). This makes it almost impossible to remove plaque with a toothbrush. ‘Tooth pick cleaning’ is often the only solution. If there is a large amount of inflammation, tissue shrinkage could expose the margin of a porcelain cap. However, who wants all that inflammation?

In most cases, the first few times you use toothpick-cleaning, the sulcus will bleed, but it you clean every second or third day, the sulcus will become healthy and not bleed. Using it every second or third day will keep tissue healthy and not cause recession, but using it every day could be traumatic.

Patients must understand that they are supposed to use the friction of the toothpick on the tooth surface when under the gum. I made sure they knew how to use it. I did not want them to just jab the toothpick under the gum. This method of cleaning also bought time for my patients with deep pockets (with the help of occlusal therapy) until I could get around to periodontal repairs—whether it was my schedule or the patients financial problem. It’s amazing how many patients controlled inflammation in pockets (even hard to reach pockets).

With the help of occlusal therapy, toothpick cleaning will help nature to do its best to delay a periodontal breakdown or even heal problems.

**Toothpaste** can be an obstacle to effective brushing. I would tell my patient to brush without toothpaste and to brush until teeth are clean using the tip of the tongue to determine if all surfaces are free of plaque. I have done this hundreds of times, making good brushers out of poor ones. The reason is simple. Toothpaste’s tingling sensation and foaming causes one’s mouth to feel clean believing that the plaque has been removed, but this is not true. When a patient demanded toothpaste, I had them use it after they had done the above have often found it to be a mistake to change ones brushing style to improve efficiency. It often decreased efficiency. This is a common mistake.
Avoiding Periodontal Surgery: Understanding the cause of a disease or dysfunctional problem is the best way to figure out what needs to be done to eliminate the problem. I have discussed how destructive periodontal disease is caused by inflammation (gingivitis) and SC. Loss of bone around teeth can only occur with SC trauma combined with gingivitis. All gingivitis is eliminated by plaque control, that is, by cleaning the teeth properly every couple of days. Nearly all gingivitis occurs between teeth because most people do a good job of cleaning teeth with a toothbrush. However, toothbrushes and mouthwash will not clean between teeth, and, since most people don’t use floss effectively, gingivitis (inflammation) and calculus (tartar) are usually present between teeth.

Since many people clench enough to loosen teeth, advance periodontal disease is born. Periodontal surgery is needed sometimes, but it can be avoided quite often. I admit that if I had understood the cause of destructive periodontal disease in my rookie years, I would have done less surgery.

OK, to avoid gum surgery one must first eliminate all gingivitis. Like I said, most people do OK in the toothbrush areas, but not between teeth. Therefore, most gum problems occur between teeth. The mopfloss method of cleaning between teeth is a wonderful way to eliminate gingivitis between teeth. This would be the logical thing to do first. Most gingivitis between teeth can be eliminated in a couple of weeks with the mopfloss method. (Even when a moderate amount of calculus is present.) That alone can eliminate the need for surgery.

I have had many patients eliminate their need for surgery through mopflossing: one such case comes to mind. This was long ago, before I understood SC trauma. My patient was trained in the mopfloss method and instructed clean every other day.

On the next visit I explained the fee. She said she could not afford it. I told her to continue the routine. Six months later, she called and told my secretary she wanted to set up a surgery appointment. When she arrived, she paid the fee and was prepared for surgery. However, when I checked her mouth, she was very free of gingival inflammation. What I had thought were deep pockets weren’t deep at all. All she needed was a through cleaning. I explained my findings and she said, “But I’ve already paid you!” I said, “I know!” We only charged her for the cleaning and she left a happy person.

Did I lose money? No indeed. It was hard to count the number of patients she sent me. There was no doubt that when patients are carefully taught how to control plaque, there was always less surgery to do. I always trained patient to control plaque on the first visit or two.

While it did reduce income from surgery, it increased my following. However, it created other problems for me as a periodontist: 1. It reduced the need for recall since patients did
not accumulate calculus (3 month recalls are a mainstay for periodontists), and 2. Some of my referring colleagues felt I was putting them down by teaching plaque control; apparently, some their patient’s asked why they had not taught them plaque control, and why hadn’t they been sent sooner. This reduced referrals.

Then, when I learned the impact of SC trauma on APD, I duplicated the same problems. Controlling plaque and SC trauma really reduced the need for surgery, and it created the same problems for referring dentists. I had effectively reduced the need for Louis O. Thomas, DDS, by developing too much preventive dentistry. However, did I lose? No indeed! It made me realize how much my profession had done for me and it gave me the opportunity to give something back.

Writing about what I have learned from gifted dentists and from my experience has made me a very happy camper. I have been a very luck man. Men like Tanner, Panky, and Barkley, Billy Michael who taught me their philosophy, and men like, Michael Kadair, Henry Gremmon, Parker Mahan, and others who taught me their skills. Many of the giants in our profession on the forefront go unnoticed. My computer and me will be happy for a long time; I have not retired, and ever will.

Alcohol and SC: The following e-mail will explain how sore muscle caused by SC trauma can be affected by alcohol.

Hi, I am an 18-year-old college student. I think I have TMJ. It all started with headaches. One night I was out drinking and partying with my friends like I always do. I had about 4 beers. I was not drunk and I got a sever migraine headache. I’ve always been able to go out and have a couple of drinks, even a lot of drinks, and never once did I get a headache. However, this time I did. I didn’t think anything of it at the time. But as time went by, it got worse. Every time drank alcohol I got a migraine headache. This is how it still is but the condition has gotten worse. I feel a pressure in my left side always and it seems like my lower jaw is sore all the time. Then I get headaches from weird stimulation that I feel in my jaw. My teeth have gotten very sensitive too. So I went to the dentist and she made me a mouthpiece to wear. She is going to send it to me in about a week or so. I hope it works but I’m still confused about the whole thing. Every time I drink I get a headache. My teeth have become more sensitive. My jaw is constantly sore on my left lower side of my face. I’m not a happy camper. I want to get rid of this have a good time. I am so frustrated. Please help. Should I go see a neurologist about my headaches? What if the mouthpiece, to keep me from SC, does not stop my headaches or constant pressure and soreness in my face? I only get headaches on my left side, how come? Please get back to me. I want to learn about my problem and cure it. I will go to through any means possible. You seem like you are very educated in this field and would greatly appreciate any help or gesture. I hope you read this because I’m going crazy. If not, I understand, but please help! Thank you. . .
Answer: I have never published what I am going to tell you, but I have discussed it with many patients. However, you have convinced me that I should include this information in my book. There has never been any research on this matter, but I'm sure that it is correct. From the information you sent me, it appears that you have TMJ on the left side. I could be more accurate if you went to the diagnostic page on my web site, fill out the questions and send your answers to me. At any rate, I'm sure you have an SC problem that produces TMJ problems on the left side. The sensitive teeth are another telltale sign of SC. It would help if you downloaded my book so you would better understand what is going on. If you can't afford it, you can download it for no charge. The thing I have not put in my book or my web site is the effect of alcohol on muscles. The muscle of the head and neck become irritated (inflamed) form overuse through SC. The inflamed muscles can act like a ‘charley horse’ in any other muscle in the body, which causes a certain degree of pain. When the inflammation goes away, the pain goes away. However, when we clench we cause more muscle inflammation or exacerbate existing inflammation so that the pain is always ready to strike. The inflamed muscles may not be causing much pain most of the time, but when alcohol enters the body it always kick things up a notch. That is, alcohol exacerbates muscle inflammation, which cause varying degrees of pain. If you had inflammation in a leg muscle, it would hurt when alcohol enters the body. The by-products of alcohol cause the trouble, but I won't get into that; that is easy to find information.

OK, let me get back to your problem. I'm sure you have noticed that some of your friends can get soused and never have headaches the next morning, while other friends have different degrees of hangover headaches. It depends on two things, the amount of muscle inflammation that is caused by SC, and the way one's body metabolizes alcohol. The type of pain depends on which facial muscles are involved, and the amount of irritation (inflammation) in the jaw joint.

Most of the time, people suffering from TMJ problems have only one joint irritated. In your case, it appears that your left jaw joint is irritated from SC (relying on the information you sent me). In some cases, a painful joint combined with painful facial muscles can simulate a migraine. I believe that is what is happening to you. I have seen a number of these cases and have successfully eliminated the problems by balancing patients’ jaws. This will eliminate SC trauma. When SC trauma is eliminated, TMJ problems go away. Your dentist is sending you a mouthpiece. Most dentists assume that a mouthpiece will stop SC, but it only changes the way one clenches. Sometimes it will stop one's SC from irritating the same muscles, but unfortunately, it directs the SC trauma somewhere else.

A mouthpiece is not a good idea. However, it you use it, only use it every other night or maybe every third night. There are better solutions to your problems than a mouthpiece. An anterior deprogrammer is a better choice. You can read about this in my book or my web site. Some people grow out of SC problems, but most people don't. Maybe you will be one of the luck ones. Apparently college has increased you daily stress, which can increase SC. Write me if you have more questions. One last point: Alcohol taken before sleep will increase SC. Good luck,